

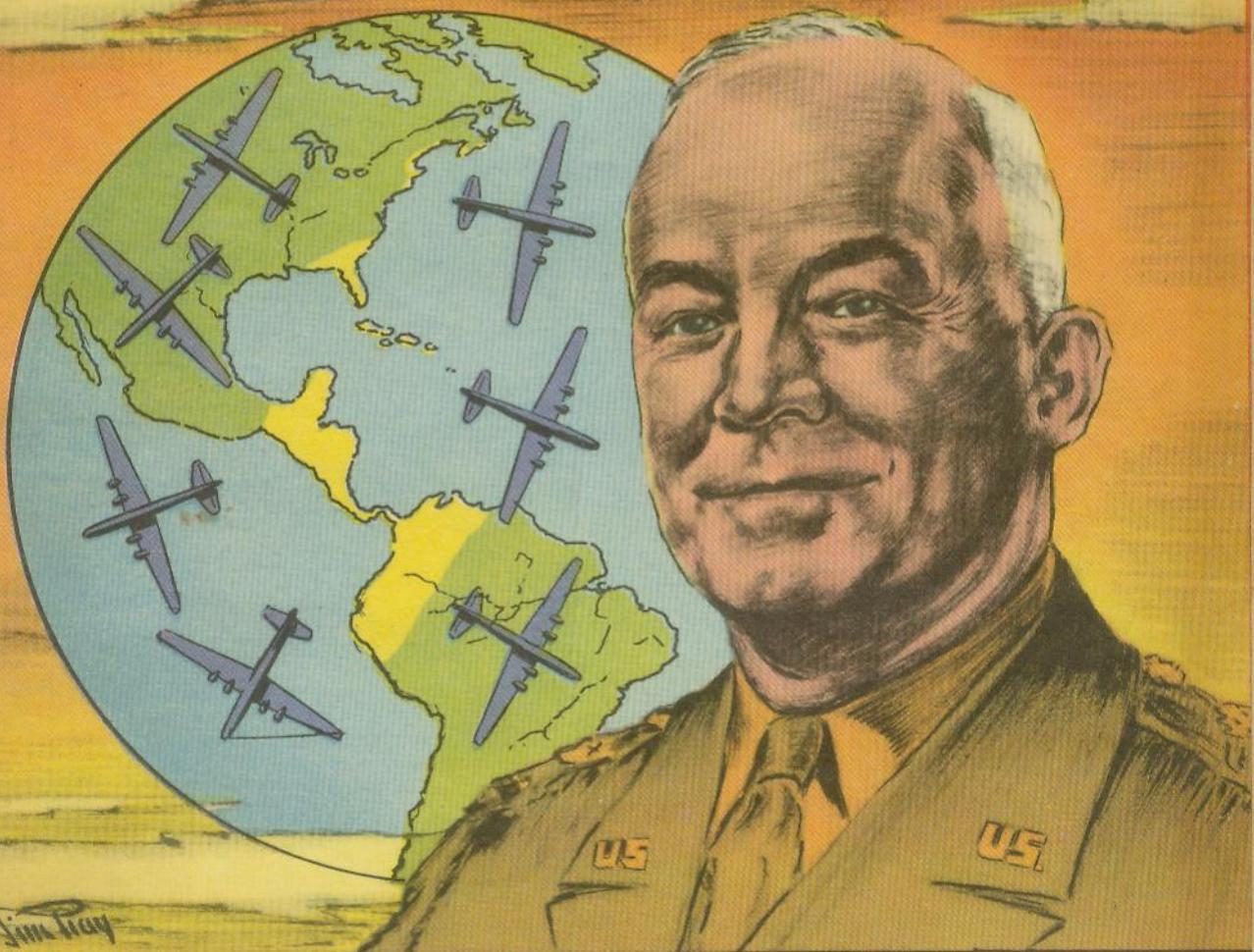
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JIM RAY'S
AVIATION



SKETCHBOOK

PICTURE STORIES OF PLANES AND PILOTS



THE STORY OF
GENERAL "HAP" ARNOLD
WARTIME CHIEF OF THE U.S. ARMY AIR FORCES
AND HIS MESSAGE TO
THE YOUNG PEOPLE OF AMERICA

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**JIM RAY'S
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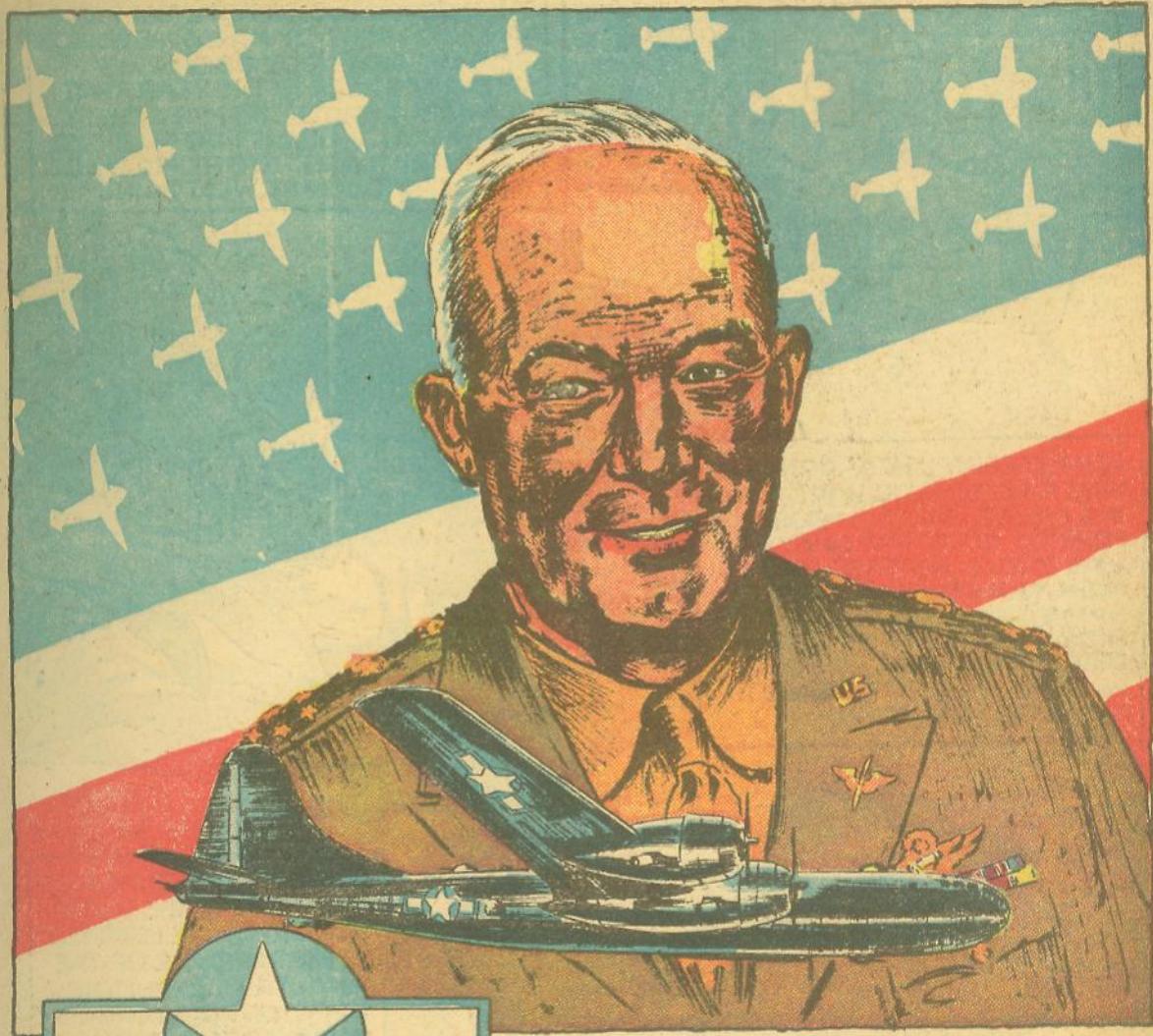
Volume I Number 2

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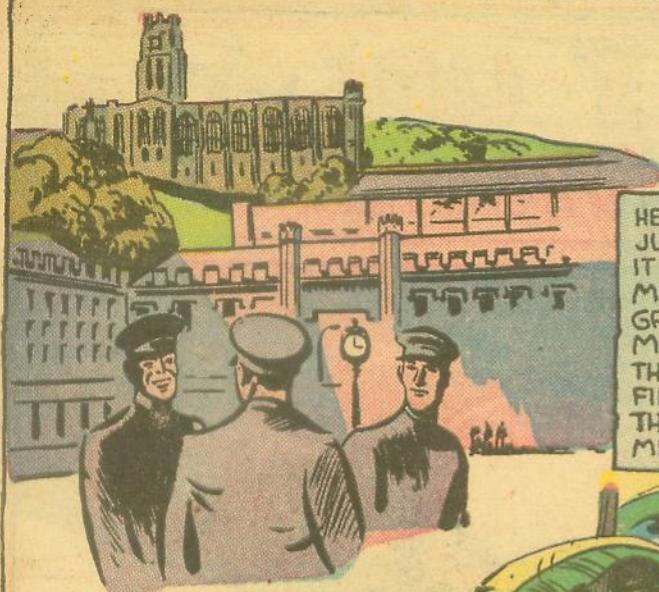
"ACES UP"

THE THRILLING TRUE EXPLOITS OF AMERICA'S HEROIC AIRMEN

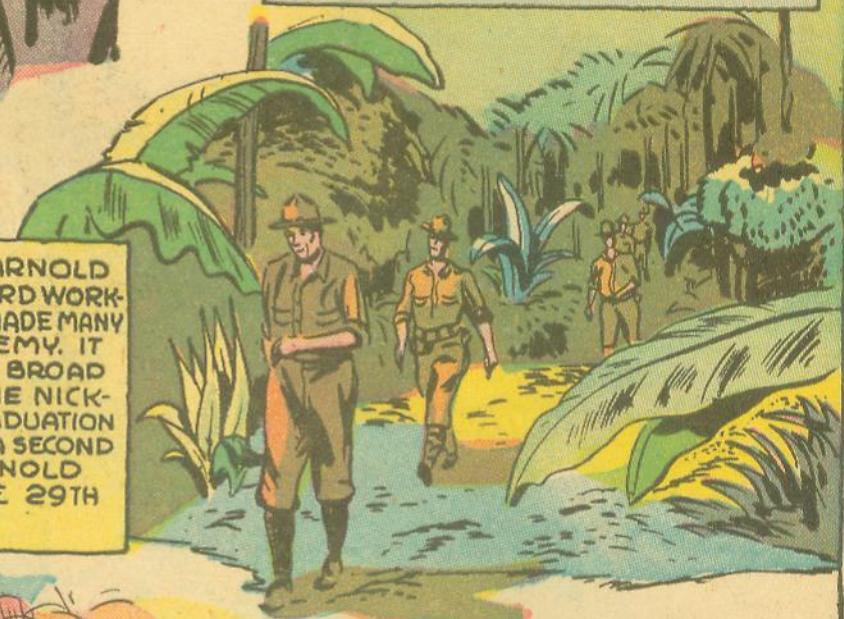


GENERAL "HAP" ARNOLD

HENRY H. ARNOLD, GENERAL OF THE ARMY, COMMANDING GENERAL OF THE UNITED STATES ARMY AIR FORCES, HAS WORN THE WINGS OF AN ARMY AVIATOR FOR THIRTY-FIVE YEARS. THE STORY OF "HAP" ARNOLD IS THE STORY OF THE WORLD'S GREATEST AIR ARMY, THE UNITED STATES ARMY AIR FORCES.



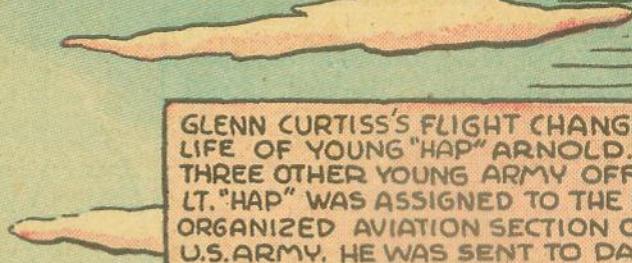
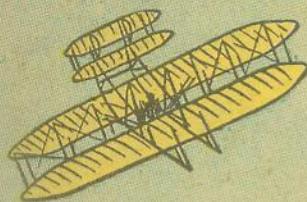
HENRY HARLEY ARNOLD WAS BORN IN JUNE, 1886, AT GLADWYNE, PENNSYLVANIA. IT IS INTERESTING TO NOTE THAT THE MAN WHO TODAY COMMANDS THE WORLD'S GREATEST AIR FORCE BEGAN HIS MILITARY CAREER IN THE YEAR THAT THE WRIGHT BROTHERS MADE THEIR FIRST FLIGHTS. IT WAS THAT YEAR, 1903, THAT HENRY H. ARNOLD ENTERED THE U.S. MILITARY ACADEMY AT WEST POINT.



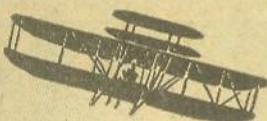
AT WEST POINT HENRY ARNOLD WAS AN ENERGETIC, HARD WORKING CADET. ARNOLD MADE MANY FRIENDS AT THE ACADEMY. IT WAS THERE THAT HIS BROAD GRIN EARNED HIM THE NICKNAME "HAP." ON GRADUATION FROM WEST POINT AS A SECOND LIEUTENANT, "HAP" ARNOLD WAS ASSIGNED TO THE 29TH INFANTRY, U.S. ARMY.



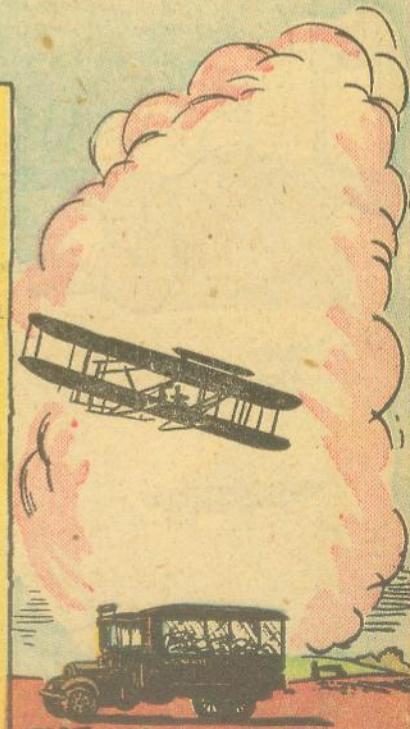
ARNOLD'S REGIMENT WAS SENT TO THE PHILIPPINES. THERE HE LEARNED THE IMPORTANCE OF THE INFANTRY'S JOB IN THE ARMY. LT. "HAP" ARNOLD RETURNED FROM DUTY IN THE PHILIPPINES IN 1909, THE YEAR THAT THE ARMY BOUGHT ITS FIRST AIRPLANE. IN 1910, ARNOLD WATCHED GLENN CURTISS COMPLETE HIS RECORD FLIGHT FROM ALBANY TO NEW YORK CITY. THIS FLIGHT THRILLED "HAP" ARNOLD AND HE MADE UP HIS MIND THAT HE WAS GOING TO LEARN TO FLY.



GLENN CURTISS'S FLIGHT CHANGED THE LIFE OF YOUNG "HAP" ARNOLD. WITH THREE OTHER YOUNG ARMY OFFICERS LT. "HAP" WAS ASSIGNED TO THE NEWLY ORGANIZED AVIATION SECTION OF THE U.S. ARMY. HE WAS SENT TO DAYTON, OHIO, WHERE TWO NEW WRIGHT PLANES WERE READY FOR DELIVERY TO THE ARMY. "HAP" ARNOLD WAS QUICK TO GRASP THINGS AND HE LEARNED TO FLY AFTER ONLY 140 MINUTES OF FLYING INSTRUCTION.



LT. ARNOLD'S FIRST ARMY AVIATION ASSIGNMENT WAS AS AN INSTRUCTOR, BUT HE ALSO DID A LOT OF FLYING ALONE. IN JULY, 1911 HE SET A WORLD ALTITUDE RECORD OF 4,167 FEET. THAT WAS HIGHER THAN MAN HAD PREVIOUSLY FLOWN. FROM THEN ON HE FLEW TO FAME. HE WAS THE FIRST TO FLY AIR MAIL. HE FLEW THE MAIL OVER A FIVE MILE ROUTE ON LONG ISLAND, NEW YORK, IN 1911. LT. ARNOLD WAS A MODEST FLYER, IN SPITE OF HIS EARLY FAME. HE WAS DARING BUT NEVER RECKLESS. HIS FLYING ABILITY ALONG WITH HIS GENIAL GRIN MADE HIM POPULAR WITH ALL FLYERS.



LT. "HAP" ARNOLD WAS A LEADER IN ALL OF THE ARMY'S EARLY AVIATION EXPERIMENTS. AT FIRST MILITARY MEN THOUGHT OF THE AIRPLANE ONLY AS A MACHINE FOR OBSERVATION. BUT FAR-SIGHTED YOUNG MEN LIKE ARNOLD VISUALIZED THE AIRPLANE AS AN OFFENSIVE MILITARY WEAPON. "HAP" WAS ONE OF THE FIRST MEN TO FIRE A MACHINE GUN FROM THE AIR. HE WAS THE FIRST MAN TO DIRECT ARTILLERY FIRE FROM THE AIR, USING A PLANE-TO GROUND WIRELESS SET.

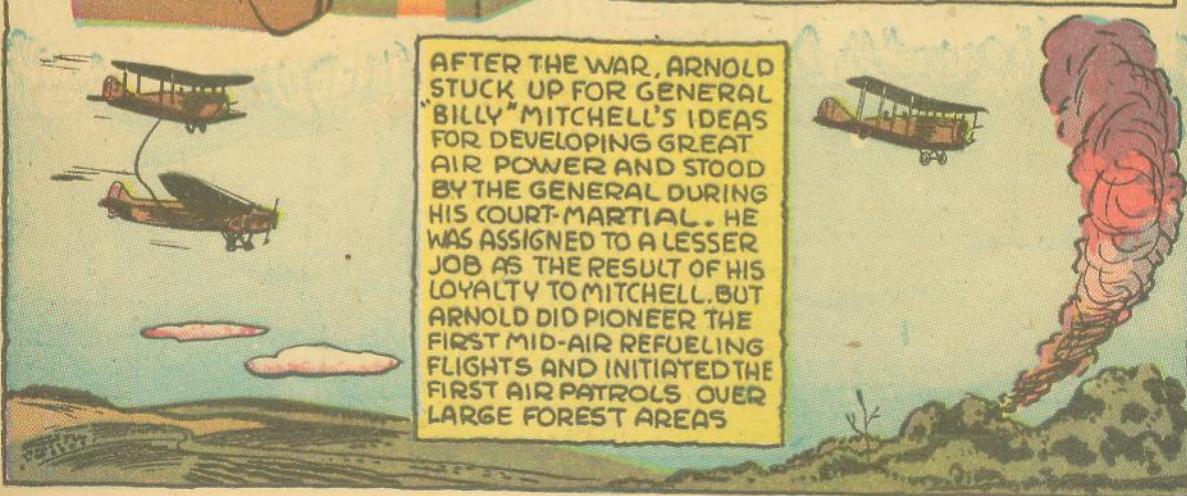


IN 1912, "HAP" ARNOLD WON THE MACKAY TROPHY FOR MAKING A RECONNAISSANCE FLIGHT DURING ARMY MANEUVERS. MAKING NOTES DURING A THIRTY-MILE, NON-STOP FLIGHT, HE PROVED TO MILITARY GROUND OFFICERS THE VALUE OF AERIAL OBSERVATION.



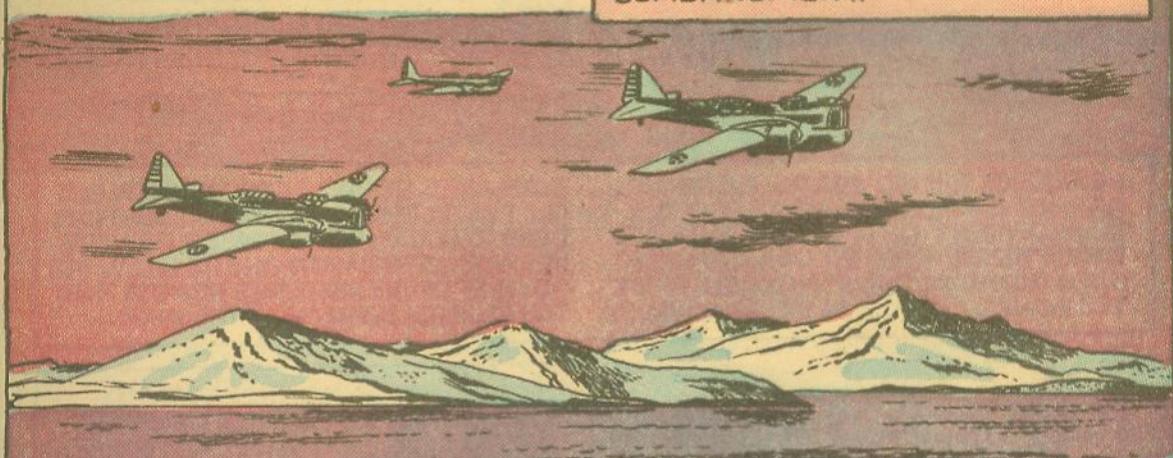
DURING WORLD WAR I, AS ASSISTANT TO GENERAL "BILLY" MITCHELL, ARNOLD HAD CHARGE OF 30 TRAINING SCHOOLS, 15,000 OFFICERS, AND 125,000 MEN.

AFTER THE WAR, ARNOLD STUCK UP FOR GENERAL "BILLY" MITCHELL'S IDEAS FOR DEVELOPING GREAT AIR POWER AND STOOD BY THE GENERAL DURING HIS COURT-MARTIAL. HE WAS ASSIGNED TO A LESSER JOB AS THE RESULT OF HIS LOYALTY TO MITCHELL. BUT ARNOLD DID PIONEER THE FIRST MID-AIR REFUELING FLIGHTS AND INITIATED THE FIRST AIR PATROLS OVER LARGE FOREST AREAS



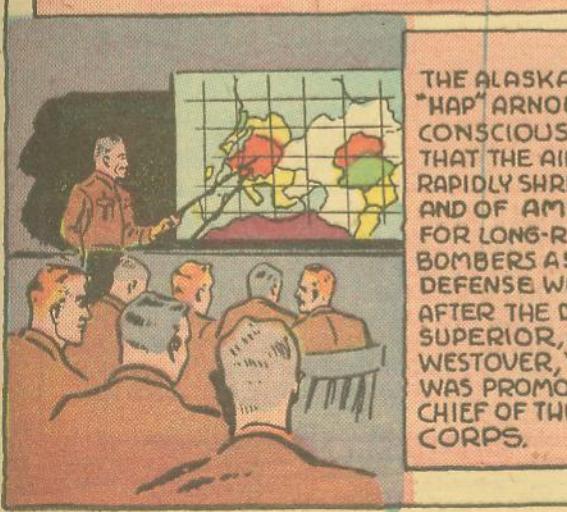


AFTER GENERAL MITCHELL'S COURT-MARTIAL, "HAP" ARNOLD WAS SHIFTED AROUND IN A NUMBER OF DIFFERENT ASSIGNMENTS. HE WAS A "FLYING" MAN AND IT WAS NOT EASY FOR HIM TO GET ALONG WITH THE OLD TIMERS IN THE ARMY WHO DID NOT AGREE WITH GENERAL MITCHELL'S BELIEF IN THE NEED FOR GREATER AIR POWER FOR AMERICA. "HAP" ARNOLD BELIEVED AS MITCHELL DID, IN THE ABILITY OF HIGH-ALTITUDE, LONG-RANGE HEAVY BOMBERS. REGARDLESS OF HIS ASSIGNMENT, "HAP" STUDIED THE STRATEGY OF HEAVY BOMBARDMENT.



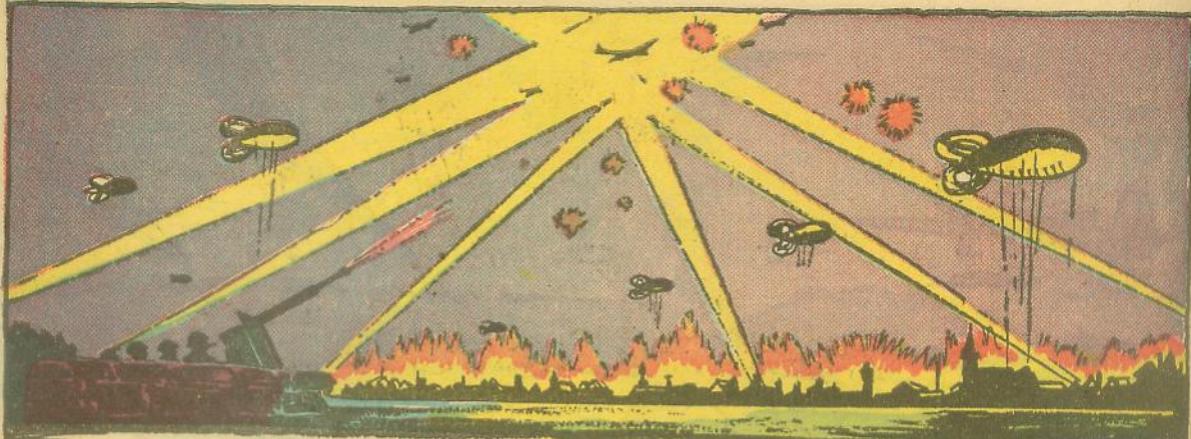
IN 1935, "HAP" ARNOLD WAS APPOINTED ASSISTANT CHIEF OF THE AIR CORPS, WITH THE RANK OF BRIGADIER GENERAL. IN 1936, GENERAL ARNOLD AGAIN WON THE MACKEY TROPHY FOR "THE MOST MERITORIOUS FLIGHT OF THE YEAR." HE ALSO RECEIVED THE DISTINGUISHED FLYING CROSS, "FOR EXTRAORDINARY ACHIEVEMENT WHILE PARTICIPATING IN AN AERIAL FLIGHT AS PILOT AND

COMMANDING OFFICER OF A BOMBARDMENT SQUADRON OF TEN AIRPLANES (MARTIN B-10 BOMBERS) FROM WASHINGTON, D.C., TO FAIRBANKS, ALASKA, AND RETURN..." HIS SKILL AND FEARLESS LEADERSHIP ENABLED HIS SQUADRON TO COMPLETE AN 18,000-MILE FLIGHT UNDER VERY DANGEROUS FLYING CONDITIONS WITHOUT LOSS OF LIFE OR EQUIPMENT.



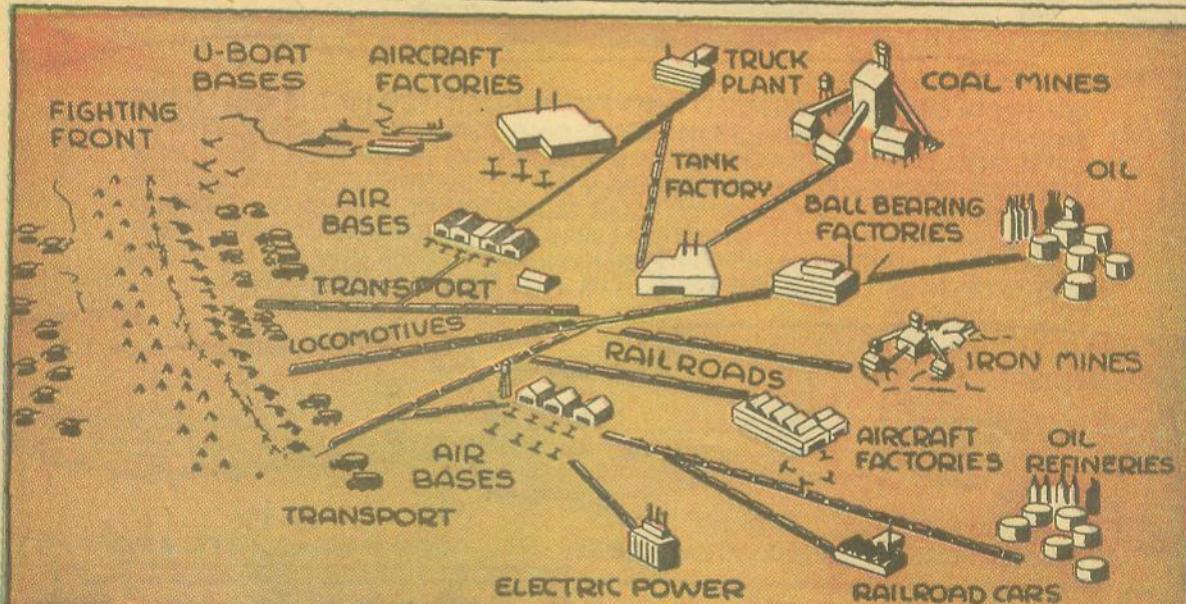
THE ALASKAN FLIGHT MADE "HAP" ARNOLD EXTREMELY CONSCIOUS OF THE FACT THAT THE AIRPLANE WAS RAPIDLY SHRINKING THE MAP AND OF AMERICA'S NEED FOR LONG-RANGE, HEAVY BOMBERS AS AN ESSENTIAL DEFENSE WEAPONS. IN 1938, AFTER THE DEATH OF HIS SUPERIOR, GENERAL OSCAR WESTOVER, "HAP" ARNOLD WAS PROMOTED TO BECOME CHIEF OF THE ARMY AIR CORPS.





AS THE NAZIS CONTINUED TO SMASH ALL RESISTANCE ON THE CONTINENT, THEIR AIR FORCES DEMONSTRATED AGAIN AND AGAIN THE VALUE OF THE AIRPLANE IN MODERN WAR. THIS WAS JUST WHAT GENERAL "BILLY" MITCHELL HAD PREDICTED TWENTY YEARS BEFORE. THIS WAS

WHAT GENERAL "HAP" ARNOLD AND HIS AIRMEN HAD BEEN PREPARING FOR AND FIGHTING FOR PLANES AND MEN FOR. THIS WAS THE AGE OF AERIAL WAR, BUT IN SPITE OF THE HEROIC EFFORTS MEN LIKE "HAP" ARNOLD, THIS COUNTRY WAS FACING WAR WITH ONLY A FEW WAR PLANES AND A FEW PILOTS.



AFTER THE NAZIS HAD BEGUN THEIR DEVASTATING AIR RAIDS ON ENGLAND, GENERAL ARNOLD, AS CHIEF OF THE U. S. ARMY AIR FORCES, WENT THERE TO GET A FIRSTHAND VIEW OF THE WAR. GENERAL ARNOLD RETURNED WITH THE CONVICTION THAT ONLY OVERWHELMING AIR POWER COULD STOP THE NAZIS. BY THAT TIME THIS COUNTRY REALIZED ITS DANGER AND IN JUNE, 1941, GENERAL ARNOLD WAS GIVEN THE TASK OF BUILDING AND DIRECTING THE WORLD'S GREATEST AIR FORCE.

GENERAL ARNOLD AND HIS STAFF WERE READY. THEY KNEW THAT THE QUICKEST WAY TO SMASH THE NAZIS WAS NOT TO DESTROY THEIR PLANES IN THE AIR, BUT TO SMASH THE FACTORIES THAT BUILT THE PLANES. WITHOUT GASOLINE NAZI AIRPLANES COULD NOT FLY. WITHOUT BALL BEARING ENGINES, TANKS, AND AUTOMOBILES COULD NOT BE BUILT. SO THE THING TO DO WAS TO DESTROY THE NAZIS' OIL SOURCES, THEIR BALL BEARING FACTORIES, RAILROADS, TRANSPORT, AND COMMUNICATIONS.



WHEN THE JAPS PULLED THEIR SNEAK ATTACK ON PEARL HARBOR, ON DECEMBER 7, 1941, "HAP" ARNOLD'S AIR CORPS HAD GROWN TO 100,000 MEN AND WARPLANES WERE BEGINNING TO ROLL OUT OF THE AIRCRAFT PLANTS AT THE RATE OF 1,500 PLANES A MONTH. BUT WITH THE JAP ATTACK THINGS REALLY BEGAN TO MOVE. THE AIR CORPS, FROM LIEUTENANT GENERAL "HAP" ARNOLD DOWN TO THE LOWEST BUCK PRIVATE, ROLLED UP ITS SLEEVES AND WENT TO WORK TO BUILD OVERNIGHT THE WORLD'S GREATEST AERIAL TASK FORCE.



1,800,000 MECHANICS, NAVIGATORS, GUNNERS AND GROUND CREWS



MILLIONS OF HORSEPOWER

AND OVERNIGHT THE AIR CORPS BEGAN TO THINK OF MEN IN TERMS OF MILLIONS INSTEAD OF THOUSANDS. AND THE YOUNG MEN OF AMERICA CAME IN MILLIONS. BOYS FROM CITIES, VILLAGES, AND FARMS RUSHED TO JOIN "HAP" ARNOLD'S AIR ARMY. PILOTS, NAVIGATORS, MECHANICS, RADIO MEN, GUNNERS, AND WEATHER MEN BY THE THOUSANDS HAD TO BE TRAINED. FLYING SCHOOLS, GUNNERY SCHOOLS, TECHNICAL SCHOOLS, AND SCHOOLS FOR THE THOUSAND AND ONE SKILLS NEEDED TO OPERATE A 2,000,000-MAN AERIAL TASK FORCE SPRANG UP OVER THE COUNTRY. AND NOT ONE ITEM IN THIS VAST PROGRAM ESCAPED THE EAGLE EYE OF THE CHIEF, "HAP" ARNOLD.



TECHNICAL TRAINING



FLYING TRAINING
FOR
185,000
PILOTS

ONE HUNDRED THOUSAND WARPLANES A YEAR FROM AMERICA'S AIRCRAFT PLANTS

1942
300 M.P.H.DESTROYING
NAZI U-BOATSDESTROYING THE
NAZI AIR FORCE

INVASION

1942
300 M.P.H.

STARTING PRACTICALLY FROM SCRATCH, WITH ONLY A FFW AIRPLANES, GENERAL "HAP" ARNOLD AND HIS AIRMEN RUSHED THEIR TRAINING OF CREWS FOR THE PLANES THAT WERE COMING. WE HAD ONLY A FEW BOMBERS AND FIGHTERS, BUT "HAP" ARNOLD ASKED FOR THE IMPOSSIBLE AND GOT IT. OUR FEW PILOTS AND PLANES FOUGHT AGAINST TERRIBLE ODDS BUT THEY HELD THE JAPS IN THE PACIFIC AND FOUGHT NAZI U-BOATS IN THE ATLANTIC. A GLOBAL AIR SERVICE WAS SET UP TO FLY SUPPLIES TO OUR FAR-FLUNG BATTLE FRONTS. PLANES BEGAN TO COME THROUGH AND "HAP'S" AIRMEN FLEW OUR B-17'S ACROSS THE ATLANTIC TO BLAST THE NAZIS. IN THREE YEARS ARNOLD'S HEAVY BOMBERS DESTROYED NAZI INDUSTRY, CUT OFF THEIR OIL SUPPLIES AND BLASTED THE NAZI AIR FORCE OUT OF THE SKIES. WHEN THE PLANES CAME THROUGH AND CREWS WERE TRAINED, THE TWENTY YEARS OF PLANNING BY MEN LIKE "HAP" ARNOLD SHORTENED THE WAR BY YEARS. IT WAS THEIR STRATEGY THAT MADE POSSIBLE THE INVASION AND GAVE US COMPLETE VICTORY OVER HITLER'S NAZI.

GLOBAL
AIR TRANSPORT1945
450 M.P.H.DESTROYING
NAZI OILDESTROYING NAZI
INDUSTRYDESTROYING
NAZI TRANSPORT



WITHIN THREE YEARS AFTER PEARL HARBOR, GENERAL "HAP" ARNOLD SAW HIS DEMAND FOR THE IMPOSSIBLE ANSWERED. IN FACT NO ONE WAS MORE RESPONSIBLE FOR ACCOMPLISHING THE IMPOSSIBLE THAN "HAP" HIMSELF. FOR MORE THAN ANY OTHER MAN "HAP" ARNOLD IS THE U. S. ARMY AIR FORCES.

THREE YEARS AFTER THE JAPS HAD SMASHED OUR PLANES AT PEARL HARBOR AND MANILA, GENERAL "HAP" ARNOLD WAS THE COMMANDER OF THE GREATEST AERIAL ARMADA THE WORLD HAD EVER SEEN. AN AIR FORCE WITH MORE THAN 100,000 PLANES AND OVER TWO MILLION MEN. AN AIR FORCE THAT WAS CAPABLE OF SENDING A COMPLETE AIR INVASION ARMY OF 10,000 MEN IN OVER 1,000 PLANES IN A SINGLE BOMBING OPERATION OVER THE VERY HEART OF THE NAZIS' HOMELAND. WHETHER IT WAS A PAIR OF SUN GLASSES OR A SUPER-BOMBER THAT WAS NEEDED "HAP" ARNOLD KNEW EVERY DETAIL ABOUT IT. AND HE DID NOT RUN HIS AIR FORCES FROM A CHAIR. HE FLEW ALL OVER THE WORLD TO LEAD HIS BELOVED AIR FORCES IN THE HEROIC AIR CAMPAIGN THAT GAVE US VICTORY



A MESSAGE TO THE
YOUNG PEOPLE OF AMERICA
FROM THE MAN WHO
COMMANDED THE
WORLD'S GREATEST AIR FORCE.
GENERAL HENRY H. ARNOLD,
WARTIME CHIEF OF THE U.S. ARMY
AIR FORCES

HEADQUARTERS, ARMY AIR FORCES
WASHINGTON

7 January 1946

Mr. Jim Ray, Editor
Jim Ray's Aviation Sketchbook
New York 13,
New York

Dear Mr. Ray,

Many thanks for your letter of December 21
inviting me to send a message to the young people of
America. I am very interested in our young people and
it is with pleasure that I forward the enclosed state-
ment.

Again, my thanks for your thoughtfulness.

Sincerely,

H.H. ARNOLD,
Commanding General, Army Air Forces

HEADQUARTERS, ARMY AIR FORCES
WASHINGTONYOUNG PEOPLE OF AMERICA:

The future of American aviation rests with you, the youth of America. All of us who had to do with the building of the great Army Air Forces that cleared its enemies from the sky have known for years that the domain of the air is preeminently for the young.

Never was aviation's need for healthy, alert youth made clearer than during the past war. Then the need became the need of our Country for if we were to be victorious we had to have forces in the air superior to anything the enemy could send up. The need was for superiority in planes and equipment but above all superiority in man.

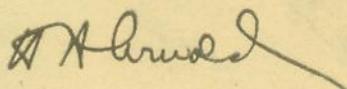
We got that superiority - in planes and equipment, and in man. From farms and from cities, from schools and from jobs came our young men and young women, to plan and build and fly and maintain the mighty air forces that brought us victory. The victory that justified the faith we all had in American youth and air power.

Now we have turned into a time of peace, which I hope will be time without end. The rewards of peace are ever greater than the rewards of war. Peacetime aviation lies ahead, promising a rich harvest of opportunity and satisfying experience for air-minded youth and providing also the training ground, the know-how and experience for time of emergency.

For her future security America needs a thriving peacetime aviation industry and a great commercial aviation. She needs intense public interest and support of aviation. She needs thinking and planning and scientific research. She needs healthy young men and women, healthy mentally, spiritually and physically. She needs all these things to support and sustain her military air forces.

Once again America expects to find her strength in her youth. She looks to you for the best pilots on earth, for the best navigators, the best radio operators, the best mechanics, the best radar experts, the best designers, the best scientists, the best of every person who helps make up the big family of the air.

America puts her faith in you. Tomorrow the air will be yours. I know you will treat your heritage wisely and well.

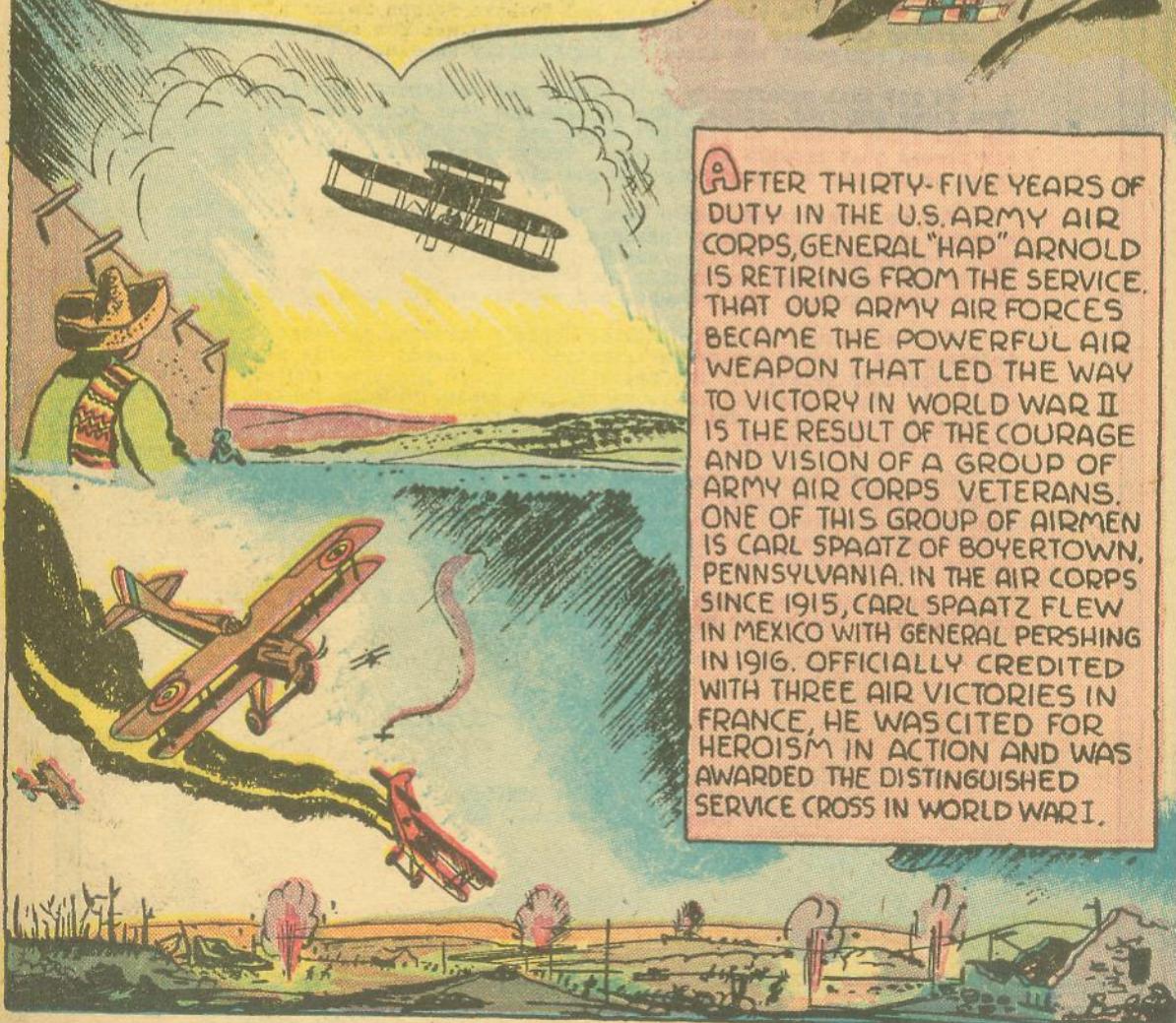
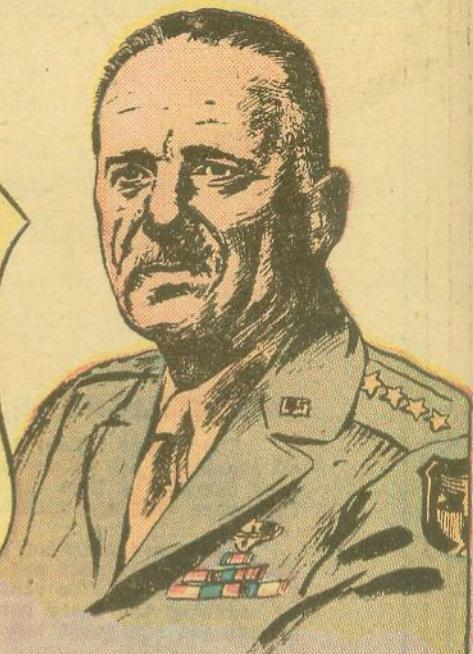


H.H. ARNOLD,
Commanding General, Army Air Forces

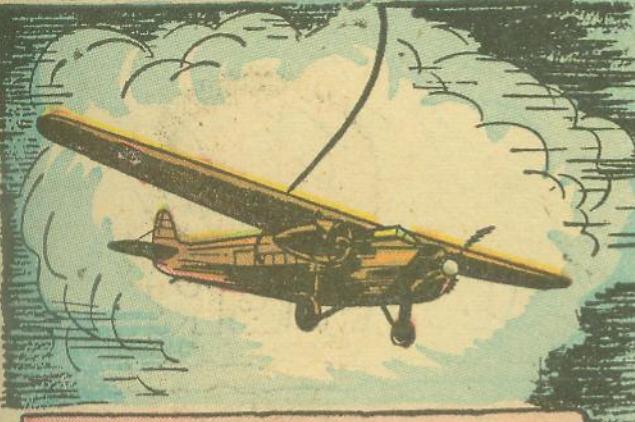


LIEUTENANT GENERAL CARL SPAATZ

GENERAL SPAATZ, WHO SUCCEEDS "HAP" ARNOLD AS CHIEF OF THE ARMY AIR FORCES, IS THE MAN WHO COMMANDDED THE AMERICAN STRATEGIC AIR FORCES THAT DESTROYED THE NAZIS' CAPABILITY TO WAGE WAR.



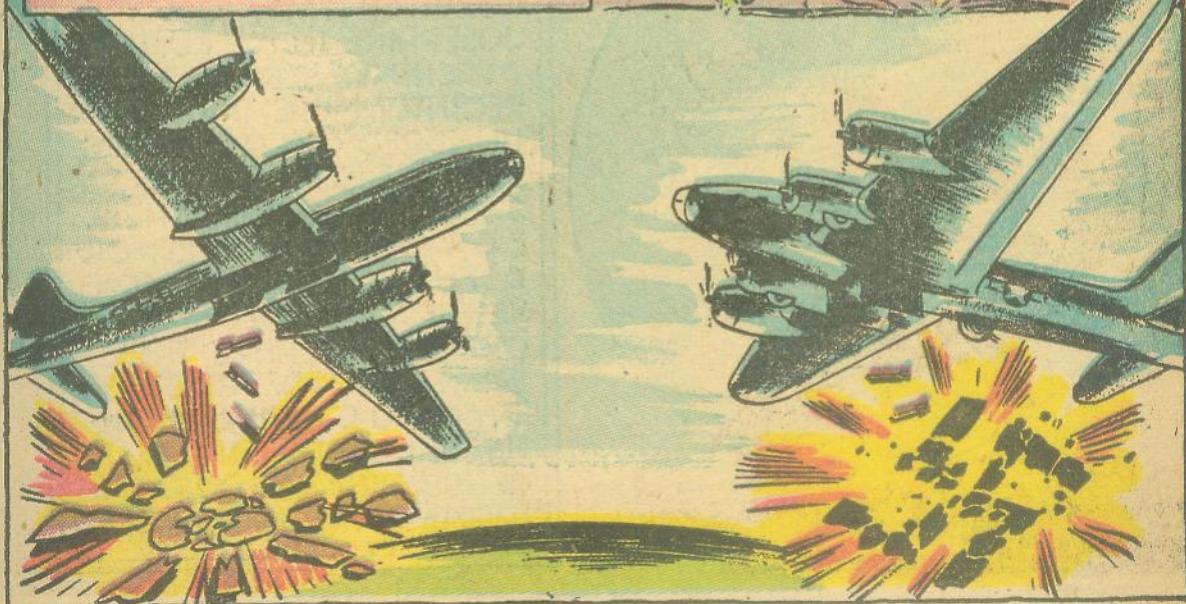
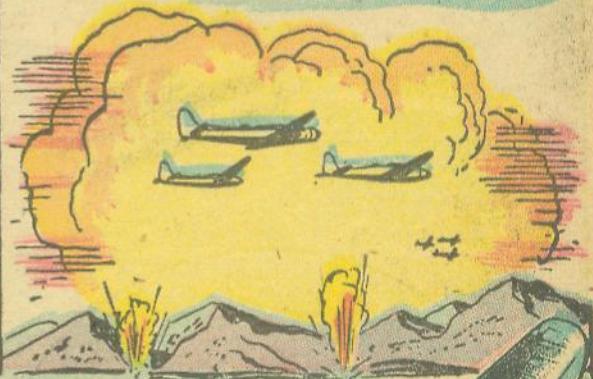
AFTER THIRTY-FIVE YEARS OF DUTY IN THE U.S. ARMY AIR CORPS, GENERAL "HAP" ARNOLD IS RETIRING FROM THE SERVICE. THAT OUR ARMY AIR FORCES BECAME THE POWERFUL AIR WEAPON THAT LED THE WAY TO VICTORY IN WORLD WAR II IS THE RESULT OF THE COURAGE AND VISION OF A GROUP OF ARMY AIR CORPS VETERANS. ONE OF THIS GROUP OF AIRMEN IS CARL SPAATZ OF BOYERTOWN, PENNSYLVANIA. IN THE AIR CORPS SINCE 1915, CARL SPAATZ FLEW IN MEXICO WITH GENERAL PERSHING IN 1916. OFFICIALLY CREDITED WITH THREE AIR VICTORIES IN FRANCE, HE WAS CITED FOR HEROISM IN ACTION AND WAS AWARDED THE DISTINGUISHED SERVICE CROSS IN WORLD WAR I.



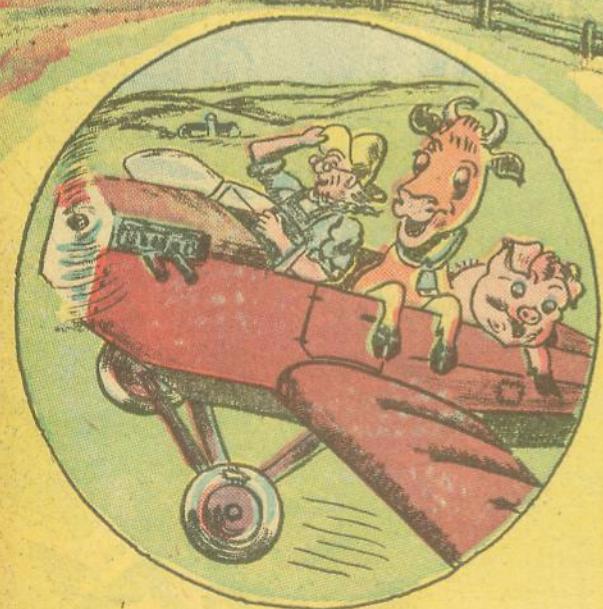
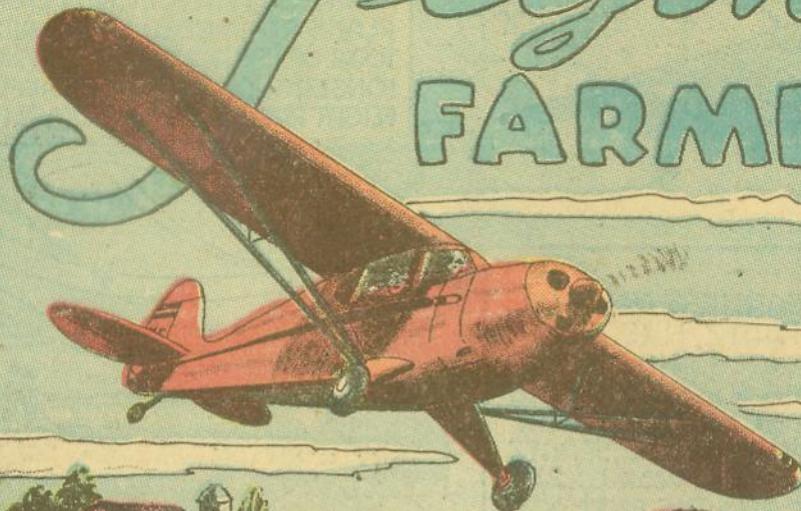
SINCE WORLD WAR I, CARL SPAATZ HAS HELD MANY IMPORTANT AIR CORPS POSTS. IN 1929, HE COMMANDED THE FAMOUS ARMY PLANE "QUESTION MARK" ON A REFUELING FLIGHT. THE PLANE REMAINED IN THE AIR FOR A TOTAL OF 150 HOURS AND 50 MINUTES—LONGER THAN ANY OTHER REFUELING FLIGHT PREVIOUSLY ACCOMPLISHED.



EVER SINCE HIS EARLIEST DAYS IN THE AIR CORPS, SPAATZ, LIKE "BILLY" MITCHELL, "HAP" ARNOLD, AND OTHERS, HAD BEEN A STRONG ADVOCATE OF THE VALUE OF STRATEGIC BOMBING. WITH THE OUTBREAK OF WORLD WAR II, SPAATZ WAS CONVINCED THAT THE WAR COULD BE WON BY DESTROYING THE ENEMY'S ABILITY TO BUILD AND FUEL HIS WAR INDUSTRIES AND FIGHTING MACHINES. FROM HIS FIRST OBSERVATIONS OF THE WAR, IN 1940, SPAATZ WAS CONVINCED THAT STRATEGIC HEAVY BOMBARDMENT COULD DEFEAT THE NAZIS AND THE JAPS. AS COMMANDER OF THE U.S. STRATEGIC AIR FORCES HE PROVED HIS THEORY BY LEADING THE WAY TO AN EARLY VICTORY. AS THE SUCCESSOR TO GENERAL "HAP" ARNOLD, GENERAL CARL SPAATZ IS THOROUGHLY CAPABLE OF CARRYING ON THE TRADITIONS OF THE GREAT U.S. ARMY AIR FORCES.

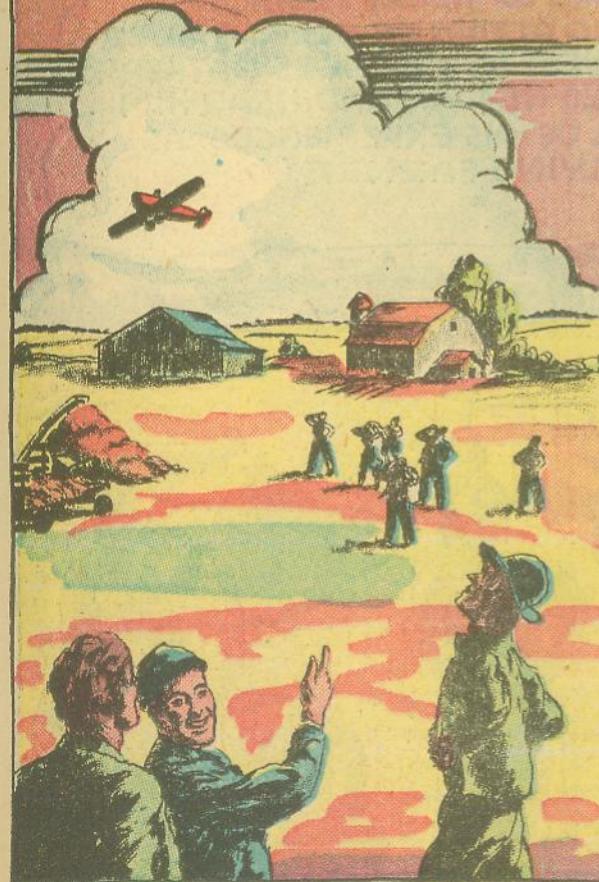
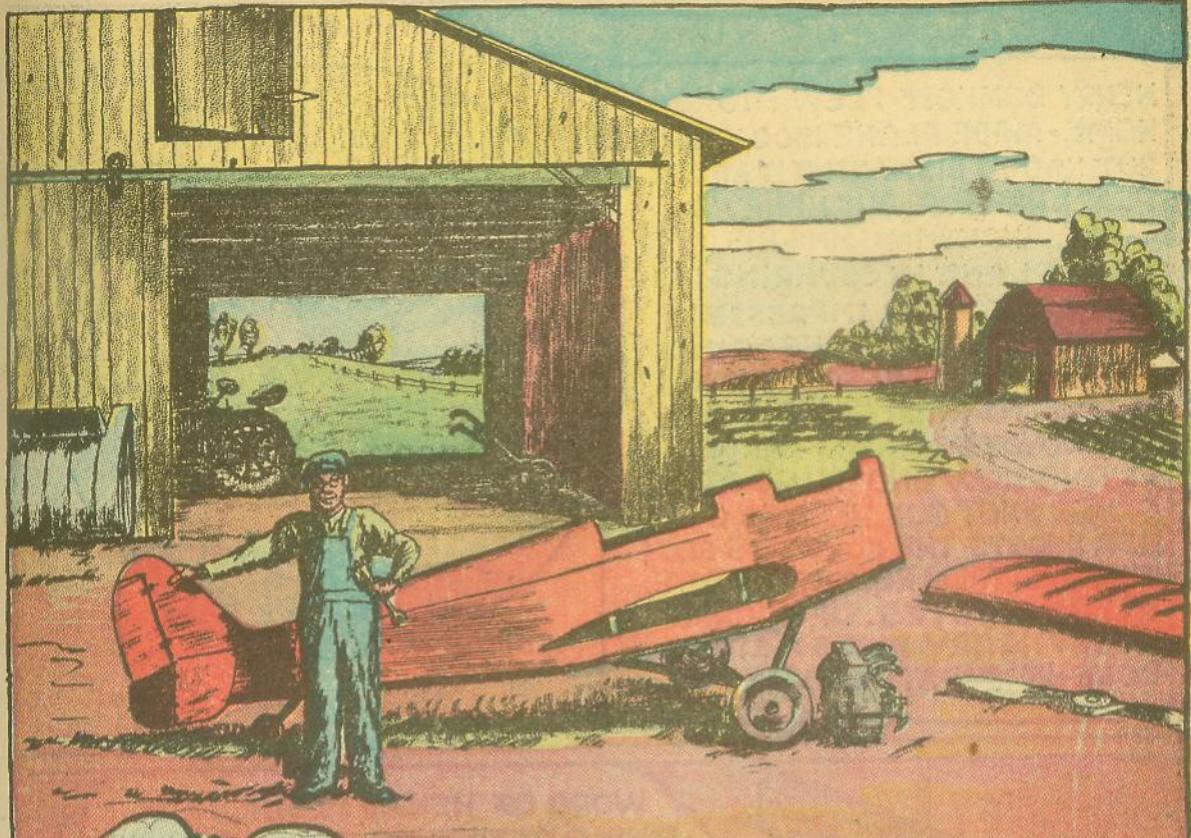


Flying FARMERS



DOWN IN OKLAHOMA THE PHRASE "WE'LL HITCH OLD DOBBIN TO THE SHAY" HAS GIVEN WAY TO "COME JOSEPHINE IN MY FLYING MACHINE."

RECENTLY MORE THAN TWO HUNDRED OKLAHOMANS, WHO USE LIGHT PLANES TO SPEED TASKS OVER THEIR BIG FARMS, ASSEMBLED FOR A "FLYING FARMERS" CONVENTION AT STILLWATER, OKLAHOMA. HERE THEY SPENT MUCH OF THEIR TIME TRYING TO CONVINCE NON-FLYING FARMERS THE VALUE OF THE AIRPLANE ON THE BIG FARMS OF THE SOUTHWEST.

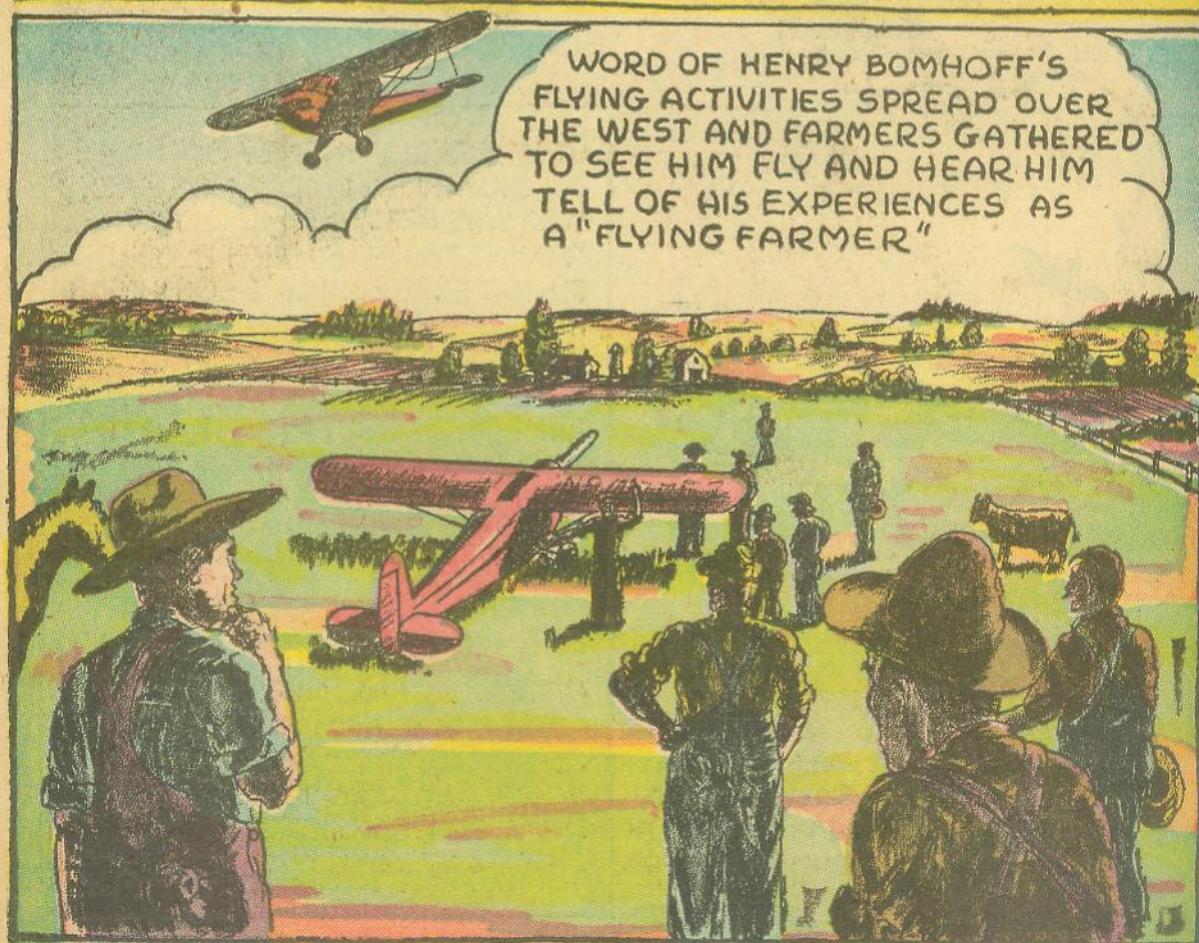


IT WAS REALLY HENRY BOMHOFF, AN OKLAHOMA WHEAT FARMER, WHO WAS RESPONSIBLE FOR THE "FLYING FARMER" IDEA. BOMHOFF'S FLYING EXPERIENCE BEGAN WHEN HE BUILT HIS OWN PLANE ON HIS FARM. HE FINISHED HIS HOME-MADE PLANE IN APRIL 1936, AND IMMEDIATELY TRIED IT OUT. BOMHOFF OPENED UP HIS MOTOR AND WAS DELIGHTED TO SEE THE TAIL RISE FROM THE GROUND. HE GAVE HER A LITTLE MORE GAS AND THEN NOTICED THAT SHE WAS RIDING SMOOTHLY. HE VENTURED A LOOK DOWN AT THE GROUND - HIS HOME- BUILT PLANE WAS FLYING. HE KEPT ON PRACTICING ALL DAY AND LEARNED TO LAND SMOOTHLY. THE NEXT SUNDAY ALL THE FARMERS TURNED OUT TO SEE HENRY FLY.

HENRY BOMHOFF FLEW HIS HOME-MADE PLANE 1800 HOURS BUT HAD TO DISMANTLE IT AFTER PEARL HARBOR, BUT HENRY'S EXPERIENCES IN USING HIS FIRST PLANE IN COVERING HIS 320 ACRE FARM IMPRESSED MANY OF HIS NEIGHBORING FARMERS. HE ALSO USED HIS PLANE TO HELP GET RID OF THE COYOTES ON HIS FARM. FLYING LOW AND USING A 12-GAUGE SHOT GUN, HENRY'S GUNNER SHOOTS THE COYOTES FROM THE AIR. THEIR RECORD TO DATE IS 785 COYOTES. OF COURSE TO-DAY HENRY FLIES A "STORE BOUGHT" PIPER "CUB".



WORD OF HENRY BOMHOFF'S FLYING ACTIVITIES SPREAD OVER THE WEST AND FARMERS GATHERED TO SEE HIM FLY AND HEAR HIM TELL OF HIS EXPERIENCES AS A "FLYING FARMER"





HENRY BOMHOFF SOLD THE OKLAHOMA FARMERS, SO WELL, ON THE BUSINESS OF COMBINING FARMING AND FLYING THAT NOW AIRPLANES ARE ALMOST AS COMMON AS COMBINES IN THAT PART OF THE COUNTRY. THE MEN AND WOMEN WHO BEGAN TO TAKE AN ACTIVE INTEREST IN FLYING WERE CALLED "FLYING FARMERS" NOW "FLYING FARMERS" CLUBS ARE AN ACTUALITY.



DURING THE PAST HARVEST SEASON THE COMBINE OF ONE OF "FLYING FARMERS" BROKE DOWN. HE HOPPED IN HIS LIGHT PLANE, MADE A FIFTY-MILE ROUND



TRIP TO TOWN TO GET THE NECESSARY SPARE PARTS, AND HAD HIS COMBINE OPERATING AGAIN 35 MINUTES AFTER IT BROKE DOWN.

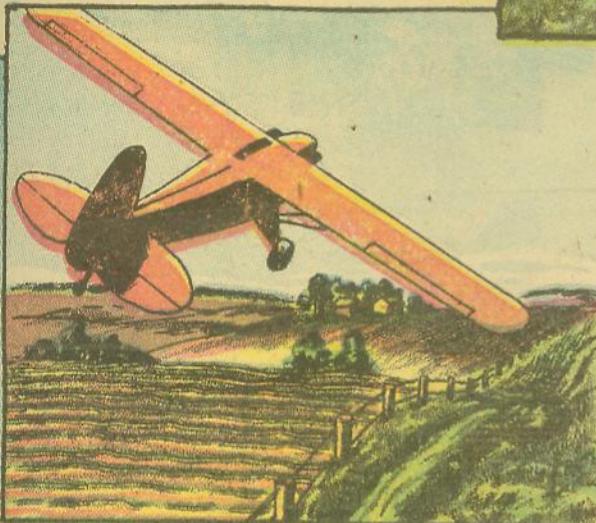


OTHER FARMERS WHO HAVE PASTURE LAND HIGH UP IN THE HILLS USE LIGHT PLANES TO CHECK UP ON THEIR HERDS. THEY CAN JUMP INTO THEIR LITTLE PLANES AND FLY UP INTO THE HILLS AND LOOK OVER THEIR STOCK FROM THE AIR, WHEN THE ROADS ARE TOO BAD TO GET TO THEM IN A CAR.

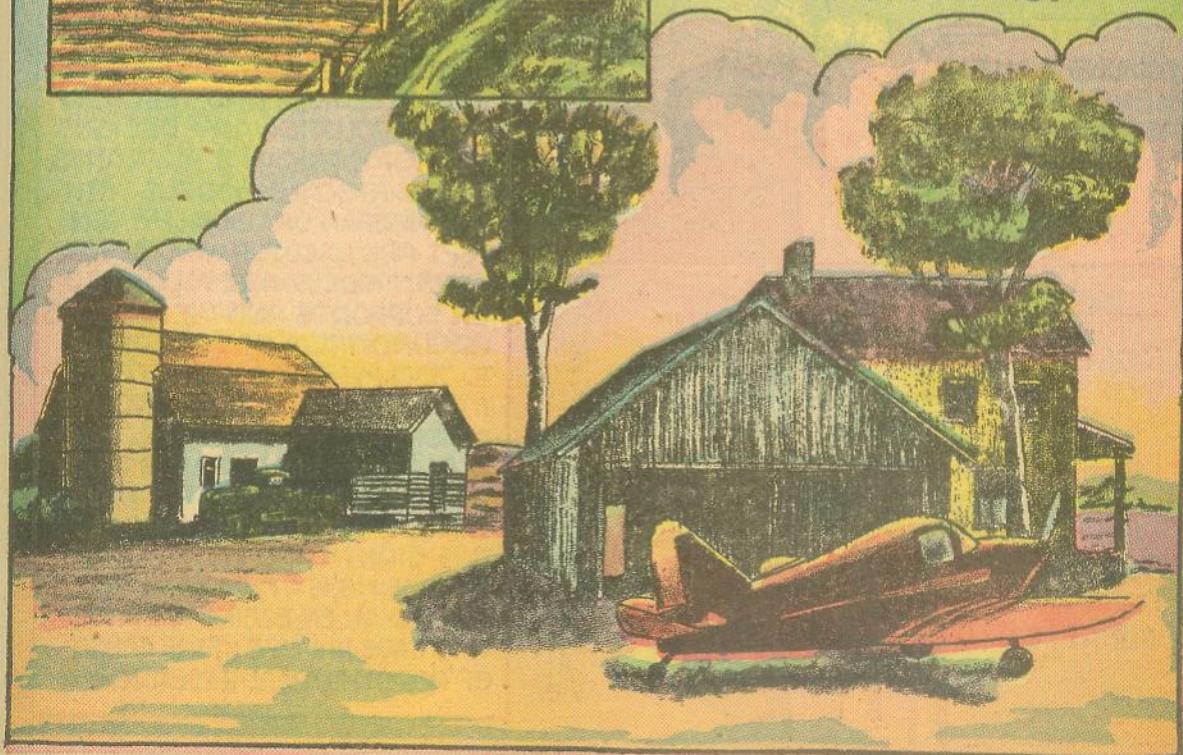
COUNTY AGENT, JIM ROSSON, OF ROGERS COUNTY, OKLAHOMA, GOT THE FLYING "BUG" FROM THE "FLYING FARMERS" AND LEARNED TO FLY IN 1942. THE NEXT SPRING JIM WAS ABLE TO CHECK THE DAMAGE CAUSED BY A FLOOD. BY STUDYING THE DAMAGE BY FLOODS FROM THE AIR HE COULD PLAN METHODS OF CUTTING DOWN FLOOD LOSSES.



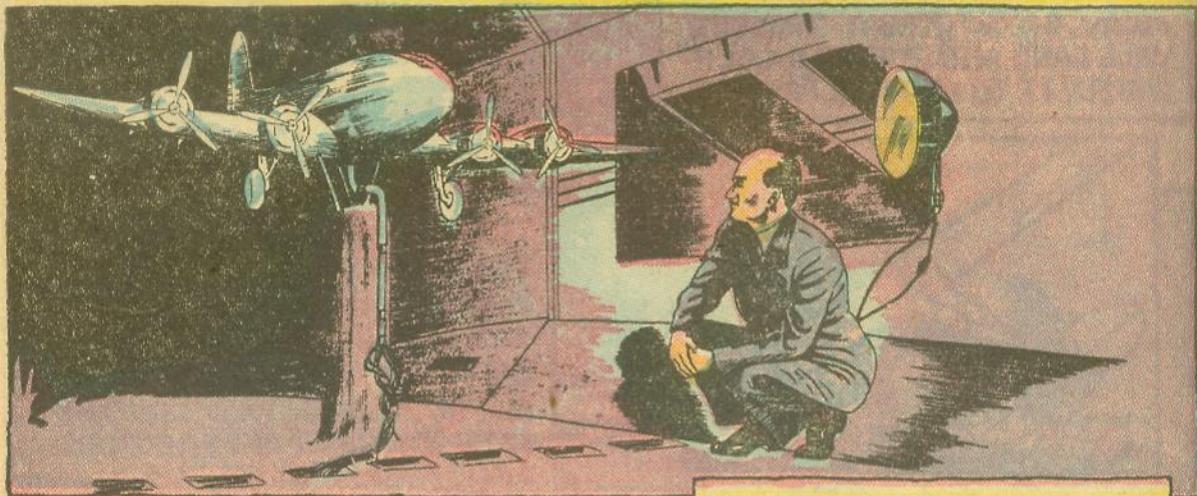
IN ADDITION TO SURVEYING THE DAMAGE DONE BY FLOODS, THE COUNTY AGENTS AND FARMERS CAN STUDY SOIL EROSION FROM THE AIR AND TAKE STEPS TO PREVENT IT. A "FLYING FARMER COMMUTES BY PLANE FROM HIS FARM WHERE HE LIVES, TO HIS CATTLE RANCH 100 MILES AWAY. SOMETIMES A RANCHER WILL LAND AND PICK UP A CALF AND FLY IT TO ANOTHER PASTURE.



THE "FLYING FARMERS" CHECK THE FENCES FROM LOW-FLYING PLANES, SEE HOW THEIR CROPS ARE COMING ALONG, AND GO SHOPPING IN TOWN WITH THEIR LITTLE PLANES. THEY LAND ON ALFALFA, WHEAT AND PASTURE LAND, AND MOST OF THEM HAVE THEIR OWN HANGARS RIGHT ON THEIR FARMS.



TOMORROW'S AIRPLANES FLY HERE

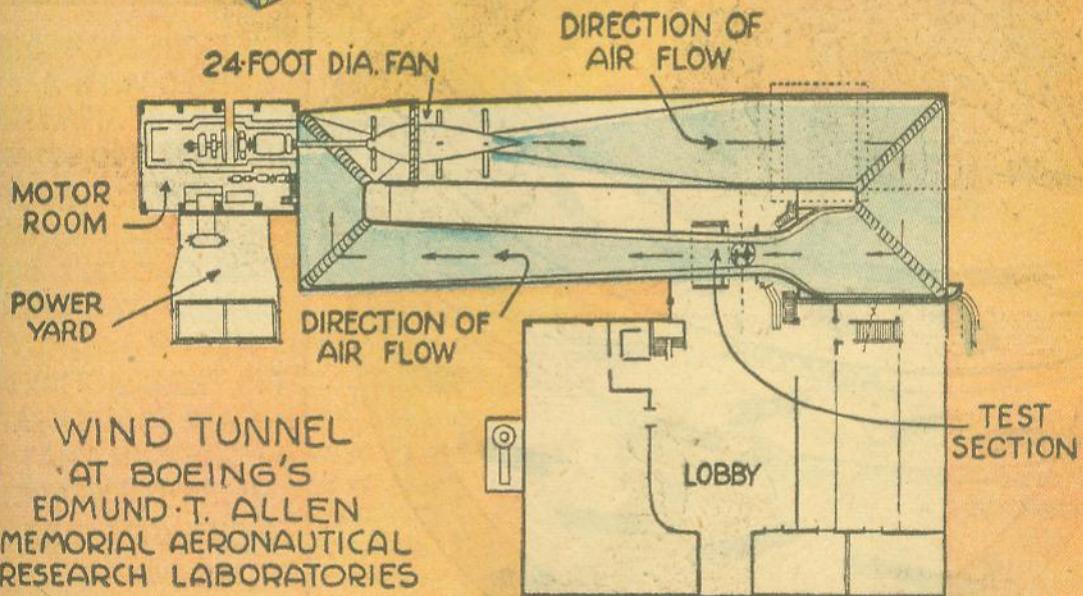
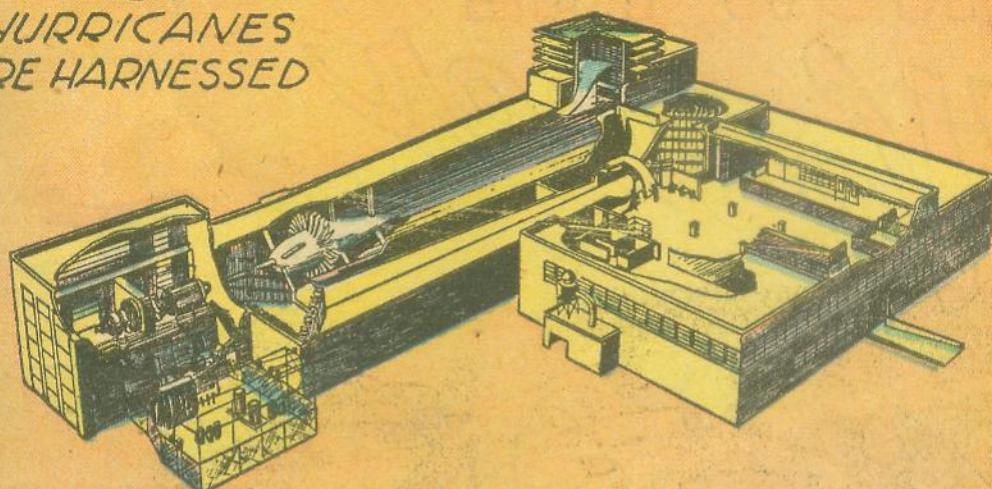


EDMUND T. ALLEN
MEMORIAL
AERONAUTICAL
LABORATORIES



TOMORROW'S PLANES DO FLY IN THE BOEING WIND TUNNEL. FOR HERE ENGINEERS PLOT FURTHER REFINEMENTS FOR TODAY'S PLANES AND TEST NEW AND REVOLUTIONARY DESIGNS FOR TOMORROW'S AIRPLANES. ACCURATE SCALE MODELS WITH A WINGSPAN OF USUALLY TEN FEET ARE USED FOR WIND TUNNEL TESTS. MODELS ARE MOUNTED ON SUPPORTS AND THE AIR FLOWS AROUND THEM AT SPEEDS UP TO 700 MILES PER HOUR. THE MODEL IS CONTROLLED AND ITS ACTIONS ARE RECORDED ELECTRICALLY FOR ENGINEERS WHO STUDY THE TESTS IN ROOMS THAT HAVE WINDOWS FACING THE MODEL. THIS GIANT LABORATORY, BUILT BY BOEING, IS A MEMORIAL TO EDMUND ALLEN, BOEING TEST PILOT, WHO GAVE HIS LIFE IN THE CAUSE OF AERONAUTICAL RESEARCH.

WHERE
HURRICANES
ARE HARNESSSED

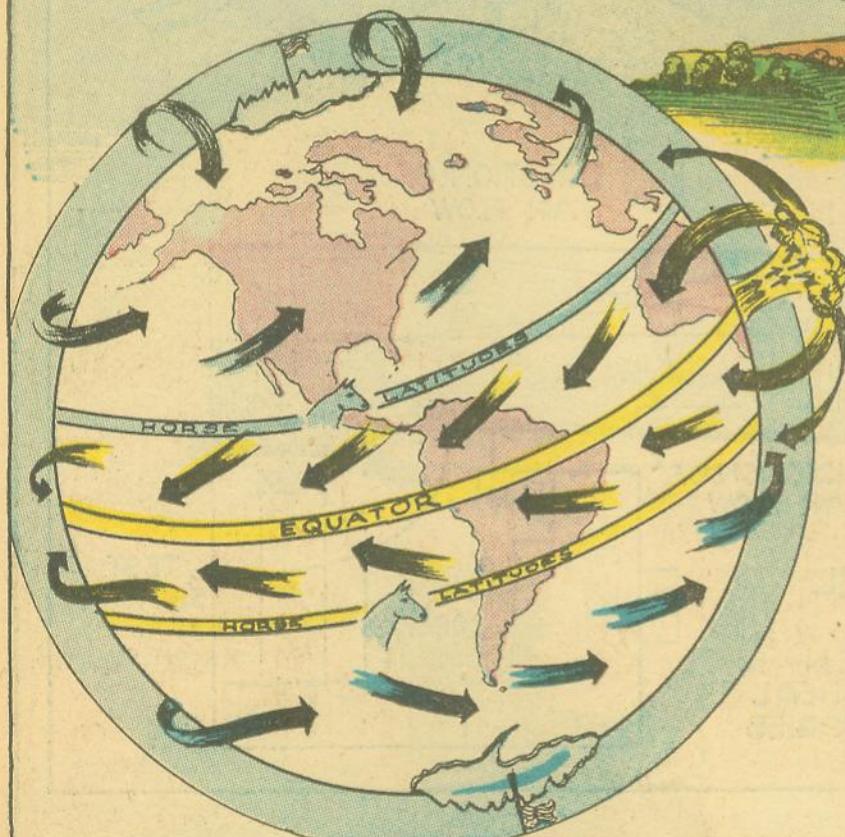


WIND TUNNEL
AT BOEING'S
EDMUND T. ALLEN
MEMORIAL AERONAUTICAL
RESEARCH LABORATORIES

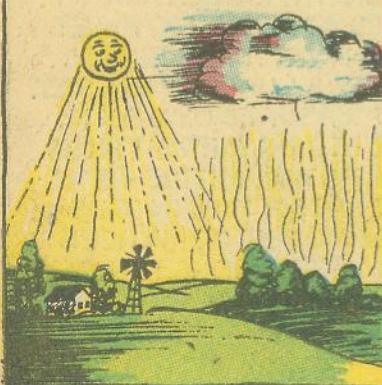
THE WIND TUNNEL IS CONSTRUCTED SOMETHOW ON THE ORDER OF A RACE TRACK FOR WIND. IT IS SHAPED LIKE A RACE TRACK TOO, AND THE WIND GOES 'ROUND AND 'ROUND THE RUNWAY. THE WIND IS WHIPPED UP BY A 24-FOOT DIAMETER FAN. THE FAN IS POWERED BY A GIANT MOTOR CAPABLE OF TURNING UP 18,000 HORSEPOWER. THE FAN RUNS UP TO 514 REVOLUTIONS PER MINUTE. ITS SIXTEEN LAMINATED SPRUCE BLADES WHIRL AT 420 M.P.H.,

WITH JUST ONE-EIGHTH INCH CLEARANCE. THE AIR TRAVELS AT ABOUT 100 MILES PER HOUR THROUGH MOST OF THE TUNNEL. THE BULK OF THE TUNNEL IS 27½ BY 27½ FEET. ONE-NINTH OF IT MEASURES ONLY 8 X 12 FEET. THIS IS THE SECTION WHERE IT PICKS UP SPEED AND WHIPS THROUGH THE BOTTLE-NECK AT TERRIFIC SPEED. IT IS IN THIS SECTION THAT THE MODELS ARE PLACED FOR THEIR TESTS. IN THE BOEING TUNNEL MODELS CAN BE TESTED IN AIR THAT REACHES THE SPEED OF SOUND.

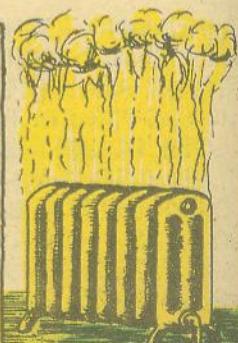
KNOW THE Weather

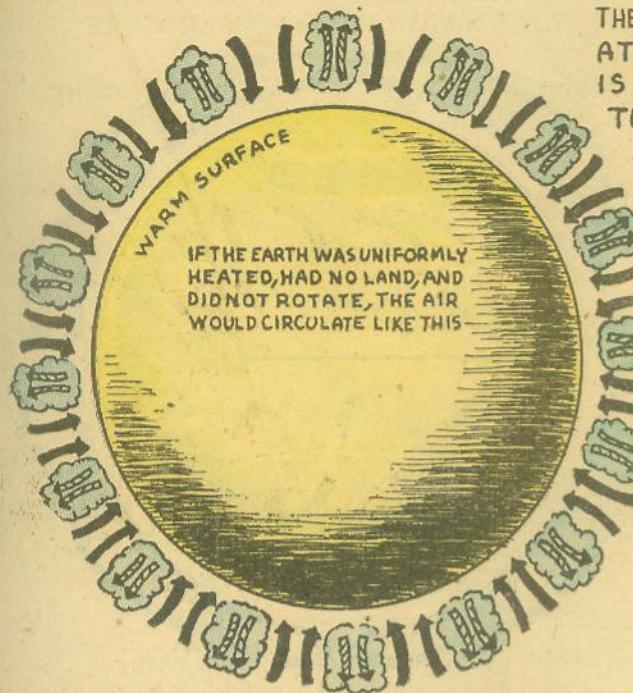


THE ENTIRE WORLD IS COVERED WITH A BLANKET OF AIR WEIGHING 5,633,000,000,000 TONS. THE ACTION OF THE SUN ON THIS MASS OF AIR CREATES OUR WEATHER. WEATHER IS NEVER LOCAL. IT IS THE REACTION OF THE AIR TO THE HEAT OF THE SUN THAT CAUSES THE WEATHER TO CHANGE OVER THE ENTIRE WORLD AT THE SAME TIME.



WHEN AIR IS WARMED BY EITHER THE SUN OR A RADIATOR, IT EXPANDS, GROWS LIGHT AND FLOATS UPWARD. COOLING AIR CONTRACTS, GROWS HEAVY AND SINKS DOWNWARD. WARM AIR CAN CONTAIN MORE MOISTURE THAN COOL AIR. WHEN IT RISES AND CONTACTS A COOLER MASS OF AIR, IT EXPANDS AND COOLS AND IT'S MOISTURE CONDENSES. THIS CREATES CLOUDS.



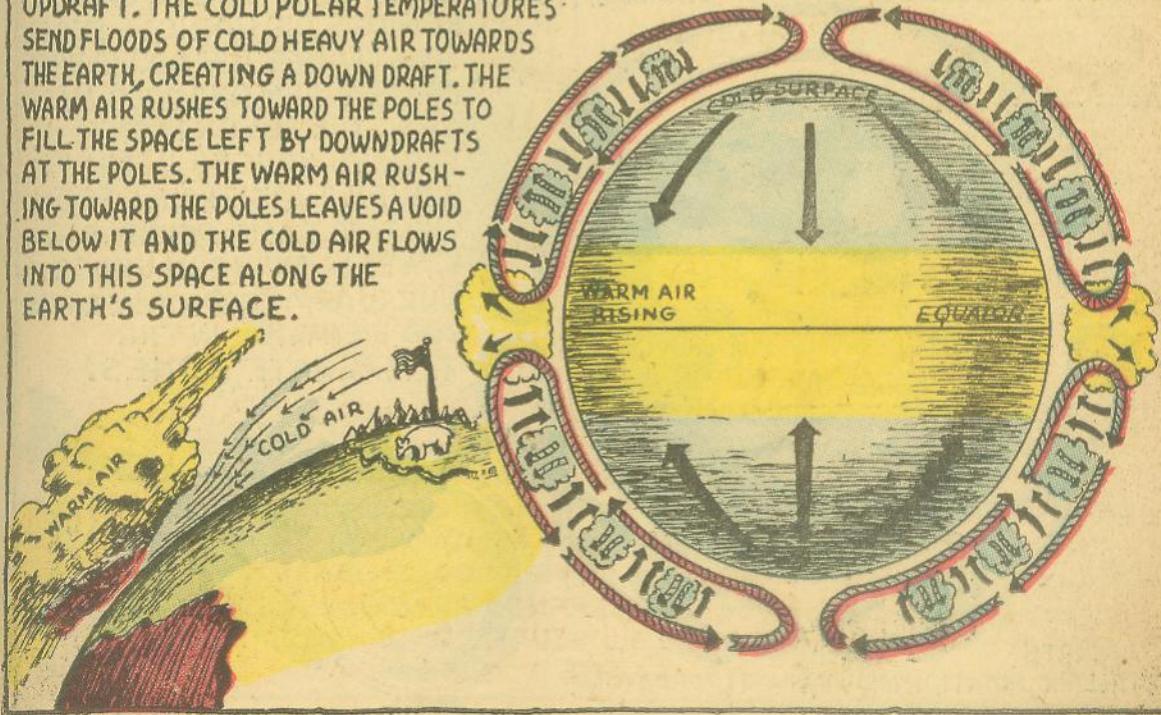


THE SUN'S ENERGY CREATES THE CIRCULATION OF AIR. THE EARTH'S SURFACE IS HEATED TO A UNIFORM TEMPERATURE BY THE SUN'S RAY'S. THE AIR MASS IN CONTACT WITH THE WARMTH OF THE EARTH'S SURFACE EXPANDS AND FLOATS UPWARD. AS IT FLOATS UPWARD THE ATMOSPHERE GETS COOLER AND THE AIR COOLS. THIS CAUSES IT'S MOISTURE TO CONDENSE AND FORM CLOUDS. AS THE AIR REACHES THE STRATOSPHERE IT COOLS GREATLY, CONTRACTS AND SINKS AGAIN TO THE EARTH. THIS IS CALLED THE VERTICAL CIRCULATION OF THE AIR.

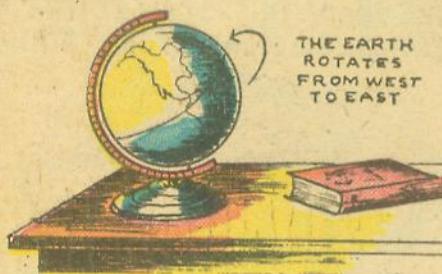


THE AIR ALSO CIRCULATES NORTH AND SOUTH OVER THE EARTH'S SURFACE. THIS CIRCULATION IS THE RESULT OF DIFFERENCE IN THE TEMPERATURE BETWEEN EQUATOR AND POLES. THE POLES ARE COLDER THAN THE TROPICS BECAUSE OF THE SUN'S LOW ELEVATION IN THE SKY. THE TROPICS WARM THE AIR AND IT FLOATS UPWARD CREATING AN UPDRAFT. THE COLD POLAR TEMPERATURES SEND FLOODS OF COLD HEAVY AIR TOWARDS THE EARTH, CREATING A DOWN DRAFT. THE WARM AIR RUSHES TOWARD THE POLES TO FILL THE SPACE LEFT BY DOWNDRAFFS AT THE POLES. THE WARM AIR RUSHING TOWARD THE POLES LEAVES A VOID BELOW IT AND THE COLD AIR FLOWS INTO THIS SPACE ALONG THE EARTH'S SURFACE.

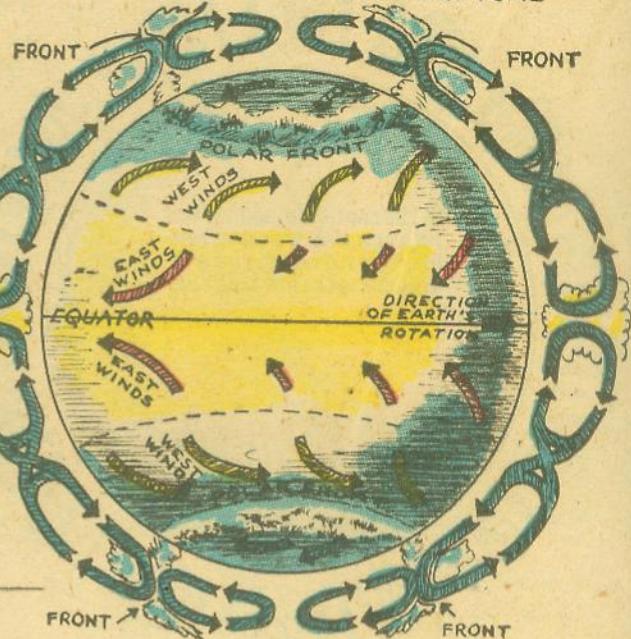
IF THE EARTH HAD NO LAND AND DID NOT ROTATE, BUT HAD VARYING TEMPERATURE THE AIR WOULD CIRCULATE AS INDICATED BELOW.



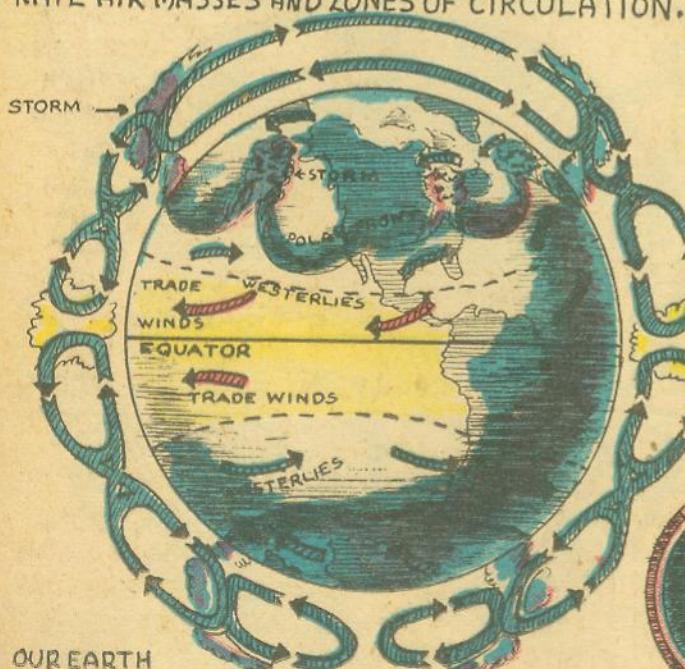
IN ADDITION TO VERTICAL CIRCULATION AND NORTH AND SOUTH CIRCULATION, THE AIR MASSES ARE INFLUENCED BY THE ROTATION OF THE EARTH. THE ROTATION OF THE EARTH CAUSES FRICTION AND CENTRIFUGAL FORCE. THIS CAUSES THE NORTH AND SOUTH CIRCULATION TO BE BROKEN INTO EASTERLY AND WESTERLY WINDS.



THE EARTH WITH NO LAND BUT WITH ROTATION AND VARYING TEMPERATURE

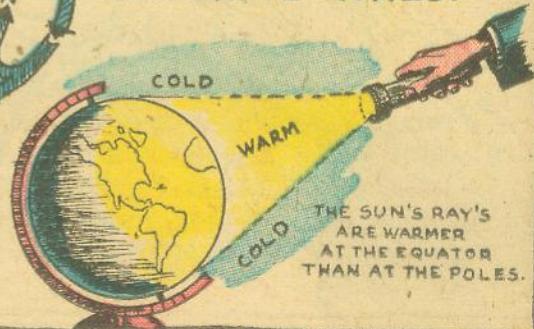


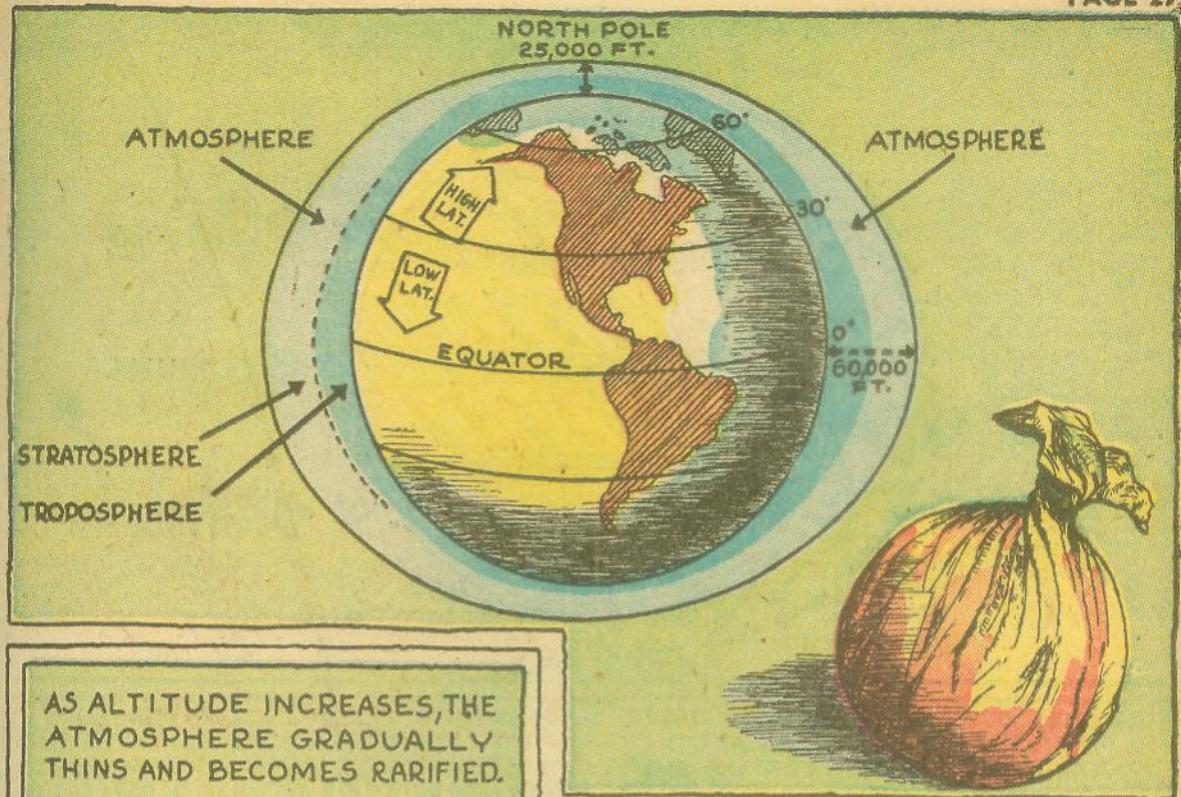
AIR CIRCULATION OVER THE EARTH IS ALSO INFLUENCED BY THE LAND AND SEA MASSES ON IT'S SURFACE. THE ROTATION OF THE EARTH AND IT'S LAND AND SEA MASSES CAUSE THE SOLAR HEAT CIRCULATION CYCLE TO BREAK UP INTO SEPARATE AIR MASSES AND ZONES OF CIRCULATION.



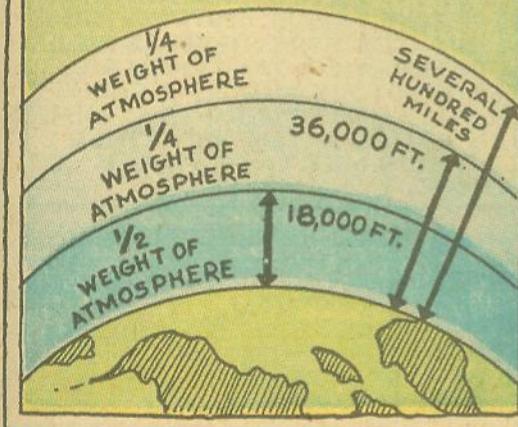
OUR EARTH
WITH LAND, ROTATION AND VARYING TEMPERATURE

THE SEPARATE AIR MASSES DIFFER IN TYPE OVER DIFFERENT PARTS OF THE EARTH. THE WARM MOIST AIR OF THE TROPICS IS CONTINUALLY FLOATING UP TO MEET THE COLD AIR OF THE POLAR REGIONS. THE VARIOUS SEASONS CHANGE THE BOUNDARIES OF THE WARM AND COLD MASSES. THE POLAR FRONT ALWAYS SURGES DOWN IN WAVES THAT TRAVEL FROM WEST TO EAST. POLAR AIR WAVES BLOWING IN UNDER THE WARM TROPICAL AIR CAUSE BAD WEATHER IN THE TEMPERATE ZONES.



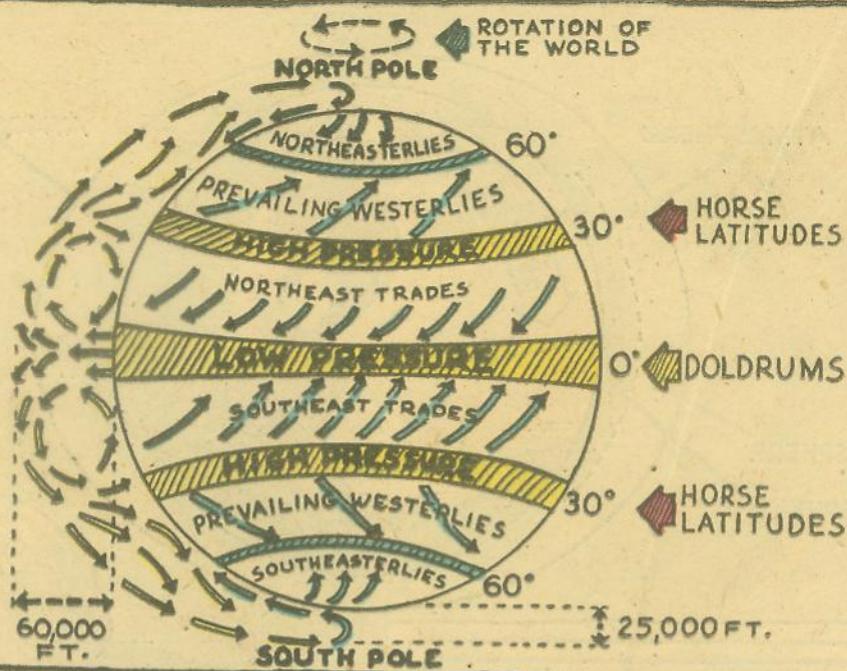


AS ALTITUDE INCREASES, THE ATMOSPHERE GRADUALLY THINS AND BECOMES RARIFIED.



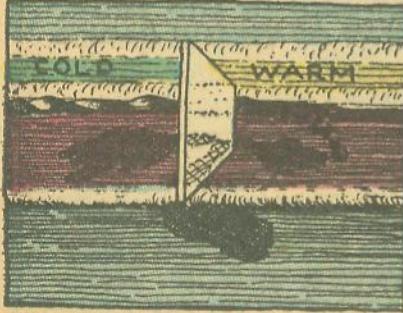
HALF THE TOTAL WEIGHT OF THE ATMOSPHERE LIES WITHIN THE FIRST 18,000 FEET. THREE-FOURTHS OF THE TOTAL ATMOSPHERIC WEIGHT IS BELOW 36,000 FEET. THE REMAINING FOURTH IS DISTRIBUTED FROM 36,000 FEET UPWARD TO SEVERAL HUNDRED MILES FROM THE EARTH'S SURFACE. ALL FACTORS WHICH MAKE UP WEATHER; CLOUDS, RAIN, SNOW, AND ICE OCCUR IN THE TROPOSPHERE, THE BAND OF ATMOSPHERE CLOSEST TO THE EARTH.

THE EARTH IS SURROUNDED BY A BLANKET OF GAS WHICH IS CALLED ATMOSPHERE. THE VERTICAL THICKNESS OF ATMOSPHERE IS SO SMALL IN COMPARISON TO THE SIZE OF THE EARTH THAT, IN PROPORTION, IT CAN BE COMPARED TO THE THICKNESS OF A SHEET OF TISSUE PAPER TIGHTLY WRAPPED AROUND AN ORANGE. ATMOSPHERE IS COMPOSED OF ABOUT 99 PER CENT OXYGEN AND NITROGEN. THE REMAINING ONE PER CENT IS MADE UP OF SEVERAL OTHER GASES, INCLUDING WATER VAPOR. THIS BLANKET OF GAS NEXT TO THE EARTH VARIES IN THICKNESS FROM 60,000 FEET IN THE TROPICS TO ABOUT 25,000 FEET OVER THE POLAR REGIONS. THE LOWER PORTION NEXT TO THE EARTH'S SURFACE, IS CALLED THE TROPOSPHERE. THE UPPER PORTION IS CALLED THE STRATOSPHERE.

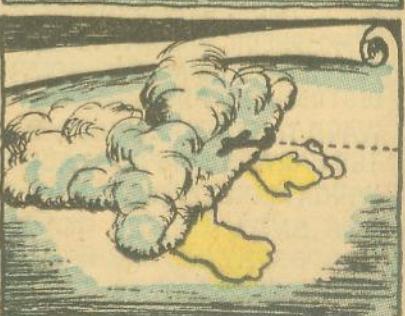
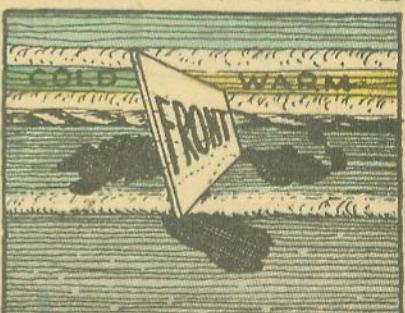


AIR MOVES OVER THE EARTH'S SURFACE IN A FIXED PATTERN. IT IS HEATED, EXPANDED AND THEREFORE RISES OVER THE EQUATOR. IT FLOWS TOWARD THE POLES AT HIGH LEVELS. AS IT REACHES THE POLAR REGION IT DROPS AND FLOWS OUTWARD AT LOW LEVELS. THE NORTHERN HEMISPHERE IS DIVIDED INTO THREE GENERAL ZONES. ZONE ONE IS BETWEEN THE EQUATOR AND LATITUDE 30° NORTH. THIS AREA HAS MANY SHOWERS, THUNDERSTORMS, AND HEAVY RAINS. ZONE TWO IS BORDERED ON ONE SIDE BY THE HIGH BAROMETRIC PRESSURE OF ZONE ONE

AND ON THE OTHER BY THE LOW PRESSURE OF THE COLD POLAR AIR OF ZONE THREE. THE WINDS FLOW FROM THE HIGH PRESSURE AREAS TOWARD LOW PRESSURE AREAS WITH DEFLECTION TO THE RIGHT ON THE NORTHERN HEMISPHERE, CAUSED BY THE EARTH'S ROTATION. THE WINDS OF ZONE TWO ARE SOUTHWESTERLY. THE WINDS GAIN STRENGTH AS THE LATITUDE INCREASES. COLD AND WARM AIR MASSES DO NOT MIX AND AS A RESULT WHEN THEY MEET THERE IS A CONFLICT, WHICH CAUSES THE WEATHER OVER THEIR MEETING PLACE TO CHANGE.



THE AIR THAT IS HEATED BY THE WARMTH OF THE TROPICS RISES AND FLOWS TOWARD THE NORTH POLE. IF THIS PROCESS WAS CONTINUED EVENTUALLY ALL OF THE AIR WOULD BE NORTH OF 60° NORTH AND THERE WOULD BE NO AIR IN THE EQUATORIAL ZONE. BUT THE SYSTEM OF CIRCULATION OF AIR PREVENTS THIS. AS WARM AIR AND COLD AIR DO NOT MIX READILY, EACH MASS TENDS TO STAY INTACT. THE BOUNDARY BETWEEN THEM IS CALLED A "FRONT". COLD AIR IS HEAVIER THAN WARM AIR AND AS THE AIR PILES UP THE COLD AIR SLIDES IN UNDER THE WARM AIR, FORCING IT UP UNTIL IT COOLS. THIS CONDENSES THE WARM AIR CREATING RAIN OR SNOW.



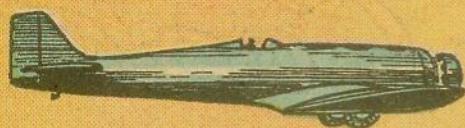
Coast to Coast IN 8 HOURS



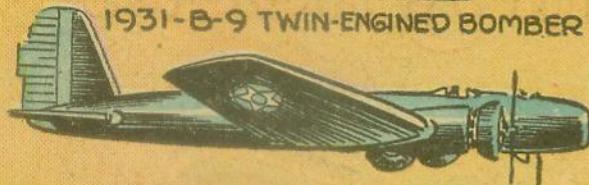
Stratocruiser



NEW YORK IS ONLY EIGHT HOURS FROM HOLLYWOOD, AND LONDON, ENGLAND IS ONLY 660 MINUTES FROM BROADWAY WHEN YOU FLY IN THE GIANT, NEW BOEING "STRATOCRUISER." THIS SPACIOUS, DOUBLE-DECK, LUXURY AIRLINER HAS A CRUISING SPEED OF 340 MILES PER HOUR, AND CAN FLY 3,000 MILES NON-STOP.



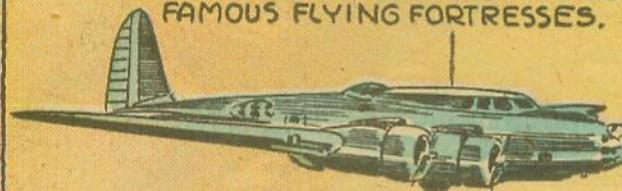
1930-BOEING 160-MPH MONOMAIL



1931-B-9 TWIN-ENGINED BOMBER



1933-BOEING 247, THE FIRST 3-MILE-A-MINUTE AIRLINER.



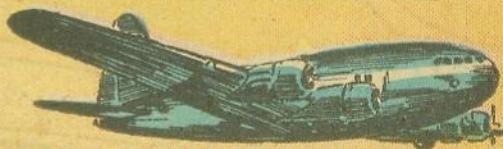
1935-BOEING 299, THE FIRST OF THE FAMOUS FLYING FORTRESSES.

ON JANUARY, 1945, A HUGE, FOUR-ENGINED TRANSPORT PLANE STREAKED THROUGH WINTER SKIES FROM SEATTLE, WASHINGTON, TO WASHINGTON, D.C. THE DISTANCE BETWEEN THE TWO CITIES WAS 2,323 AIR MILES. THE TRANSPORT'S TIME FOR THE TRIP WAS 6 HOURS, 3 MINUTES, 50 SECONDS, OR 383 MILES PER HOUR. THIS WAS THE INTRODUCTION TO THE PUBLIC OF THE TYPE OF AIRLINER THAT THEY WOULD FLY IN POST-WAR DAYS. THE TRANSPORT WAS THE MILITARY PROTOTYPE OF THE BOEING 377 "STRATOCRUISER". THIS FIRST MODEL 377 WAS THE LATEST ADDITION TO A FAMOUS FAMILY OF FOUR-ENGINED AIRPLANES THAT HAVE BEEN PIONEERED BY THE BOEING AIRCRAFT COMPANY IN THE LAST DECADE.

1937 BOEING B-15, 35-TON BOMBER

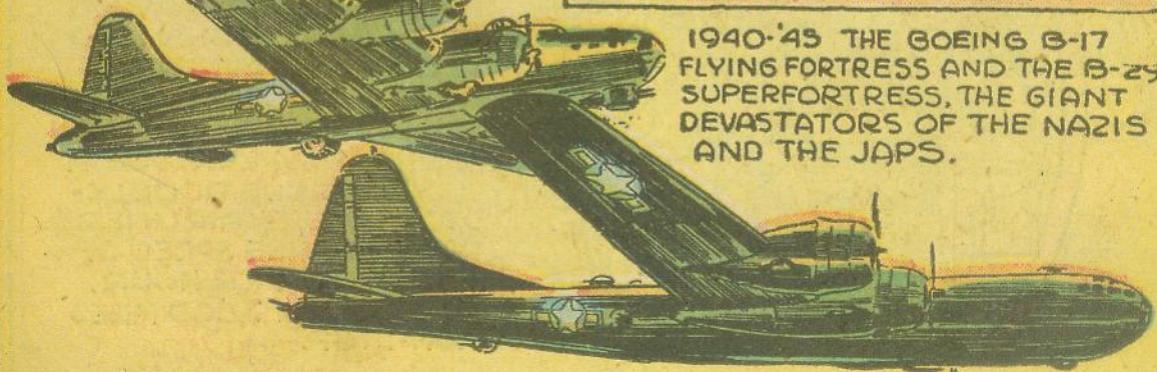


1939 BOEING ATLANTIC CLIPPER



1940 BOEING STRATOLINER

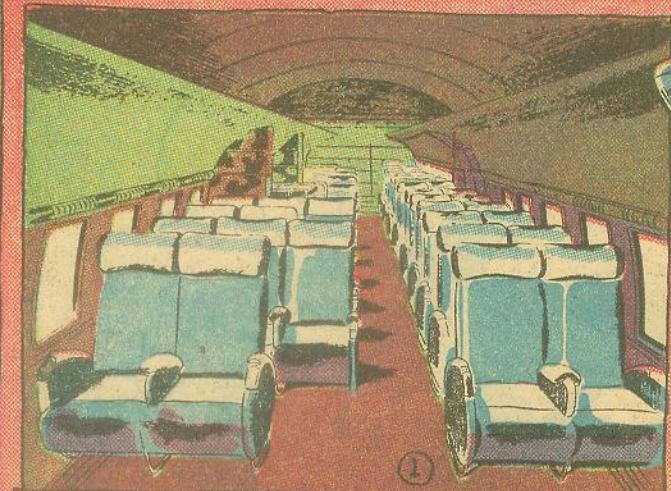
1940-'45 THE BOEING B-17 FLYING FORTRESS AND THE B-29 SUPERFORTRESS, THE GIANT DEVASTATORS OF THE NAZIS AND THE JAPS.



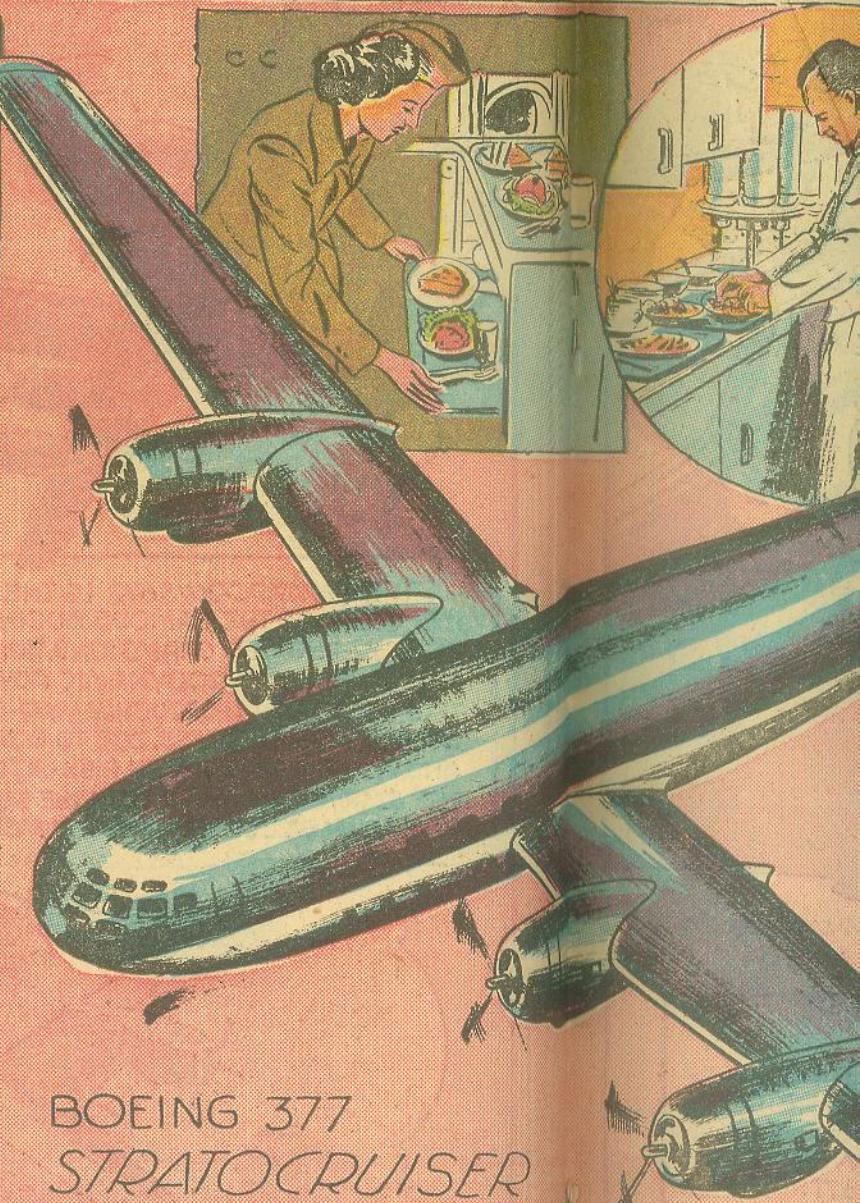
THE STRATOCRUISER IS THE NEWEST MEMBER OF THE FAMOUS BOEING FAMILY OF FOUR-ENGINED CHAMPIONS. BUILT INTO THIS AIRPLANE ARE AERODYNAMIC ADVANCEMENTS THAT HAVE BEEN THOROUGHLY WAR-TESTED IN THE B-29 SUPERFORTRESS. DUE TO BOEING'S STUDY AND PIONEER WORK WITH HIGH-ALTITUDE FLIGHT, THE STRATOCRUISER FLIES IN THE STRATOSPHERE WITH LOW-LEVEL COMFORT FOR ITS PASSENGERS.

CROSS-SECTION STRATOCRUISER FUSELAGE

THE STRATOCRUISER IS NOT JUST AN AIRLINE VERSION OF THE B-29. SPACE, COMFORT, AND LOAD-CARRYING ABILITY HAVE BEEN ADDED TO THE BASIC DESIGN AND AIR-WORTHINESS OF THE B-29. BY SLICING OFF THE TOP OF THE B-29 FUSELAGE AND FITTING A LARGER AND ROOMIER FUSELAGE TO THE B-29 BASE AND WINGS, BOEING DESIGNERS HAVE GIVEN US A LUXURIOUS, DOUBLE-DECKED, SUPER AIRLINER.

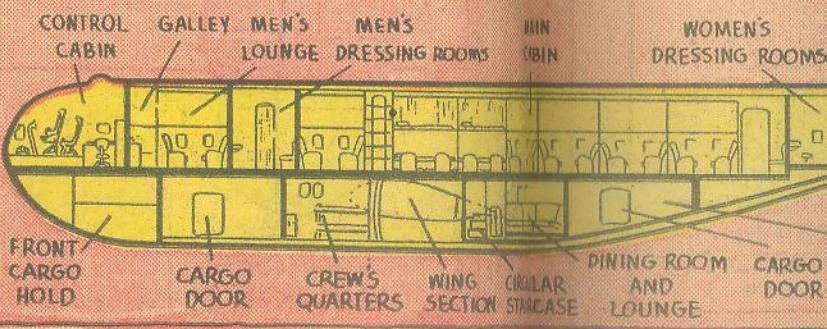


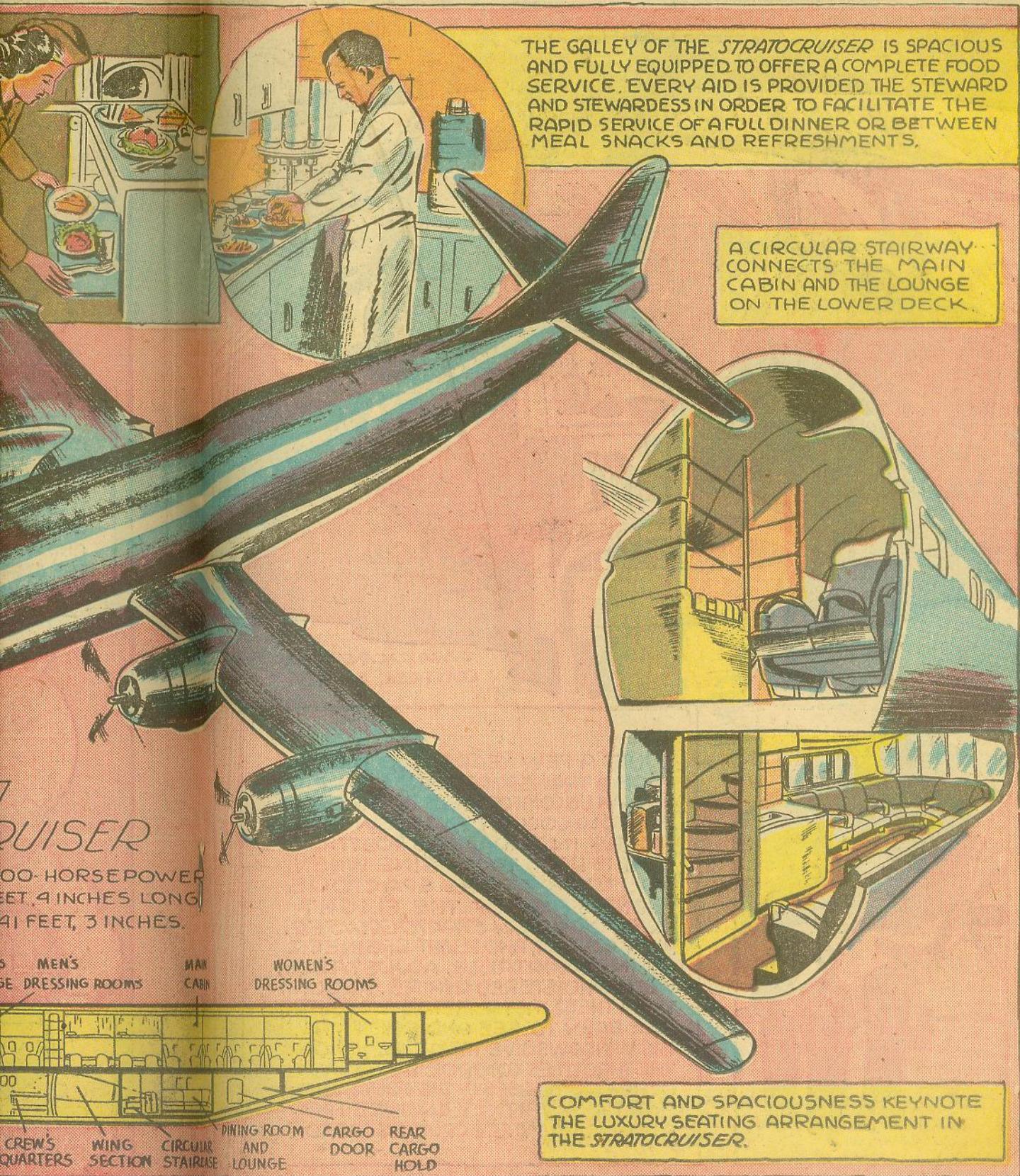
THE 377 AS A DAY-COACH TRANSPORTS UP TO 100 PASSENGERS, WITH SEATING ARRANGEMENT SHOWN IN DRAWING(1). THE TRANSOCEANIC STRATOCRUISER CAN CARRY 36 PASSENGERS IN COMFORTABLE, ROOMY BEDS BY CONVERTING THE PULL-MAN-TYPE SEATS TO COMPARTMENTS AS SHOWN IN DRAWING(2) THE ADJUSTABLE SEATS (3) ARE ROOMY AND COMFORTABLE



BOEING 377 STRATOCRUISER

POWERED WITH FOUR 3,500-HORSEPOWER ENGINES, THE 377 IS 110 FEET, 4 INCHES LONG AND HAS A WINGSPAN OF 141 FEET, 3 INCHES.





THE GALLEY OF THE *STRATOCRUISER* IS SPACIOUS AND FULLY EQUIPPED TO OFFER A COMPLETE FOOD SERVICE. EVERY AID IS PROVIDED THE STEWARD AND STEWARDESS IN ORDER TO FACILITATE THE RAPID SERVICE OF A FULL DINNER OR BETWEEN MEAL SNACKS AND REFRESHMENTS.

A CIRCULAR STAIRWAY CONNECTS THE MAIN CABIN AND THE LOUNGE ON THE LOWER DECK.

QUISER

100-HORSEPOWER
EET, 4 INCHES LONG
41 FEET, 3 INCHES.

S. MEN'S
LARGE DRESSING ROOMS

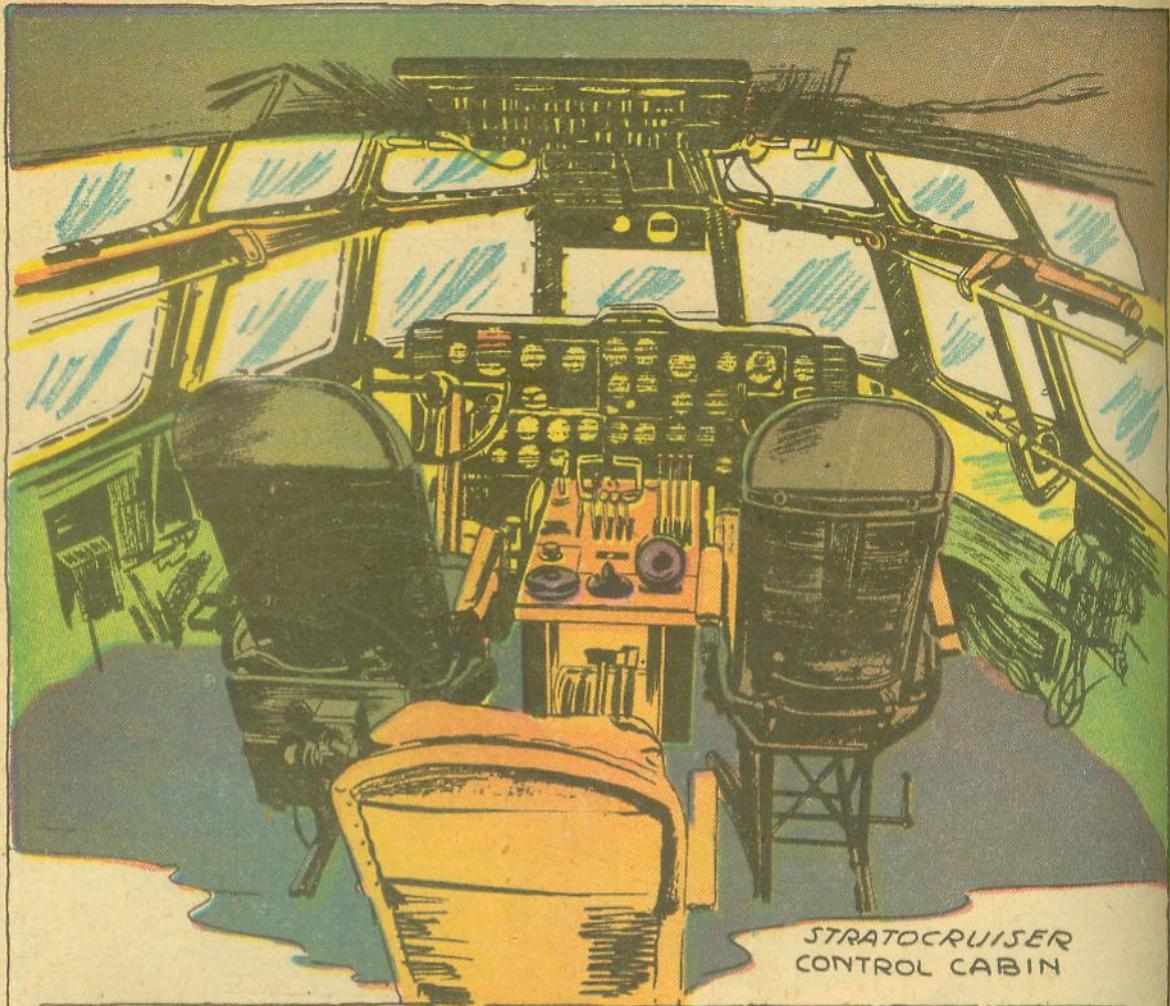
MEAN
CABIN

WOMEN'S
DRESSING ROOMS

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COMFORT AND SPACIOUSNESS KEYNOTE THE LUXURY SEATING ARRANGEMENT IN THE STRATOCRUISER.



STRATOCRUISER
CONTROL CABIN



JUST A FEW YEARS AGO, A PILOT OF A TRANSPORT PLANE SQUIRMD INTO AN UNCOMFORTABLE BUCKET SEAT IN A COLD COCKPIT AND FLEW FOR HOURS IN A CRAMPED POSITION. THAT IS HARD TO IMAGINE WHEN YOU LOOK AT THE SPACIOUS "FRONT OFFICE" OF THE FLIGHT CREW OF A NEW STRATOCRUISER. PILOT, CO-PILOT, AND FLIGHT ENGINEER SIT IN COMFORTABLE, ADJUSTABLE, WELL-UPHOLSTERED CHAIRS. AROUND THEM THEIR INSTRUMENTS AND CONTROLS ARE EASY TO SEE AND OPERATE. BIG WINDOWS GIVE THEM WIDE VISION. THE THROTTLES CONTROL THE POWER OF 14,000 HORSES IN THE FOUR BIG PRATT AND WHITNEY ENGINES AND A SIX-MILE-A-MINUTE CRUISING SPEED.

IT WILL TAKE ONLY ABOUT ELEVEN HOURS FROM NEW YORK TO LONDON AS THE STRATOCRUISER FLIES AT 340 MILES AN HOUR AT 30,000 FEET ABOVE THE SEA.



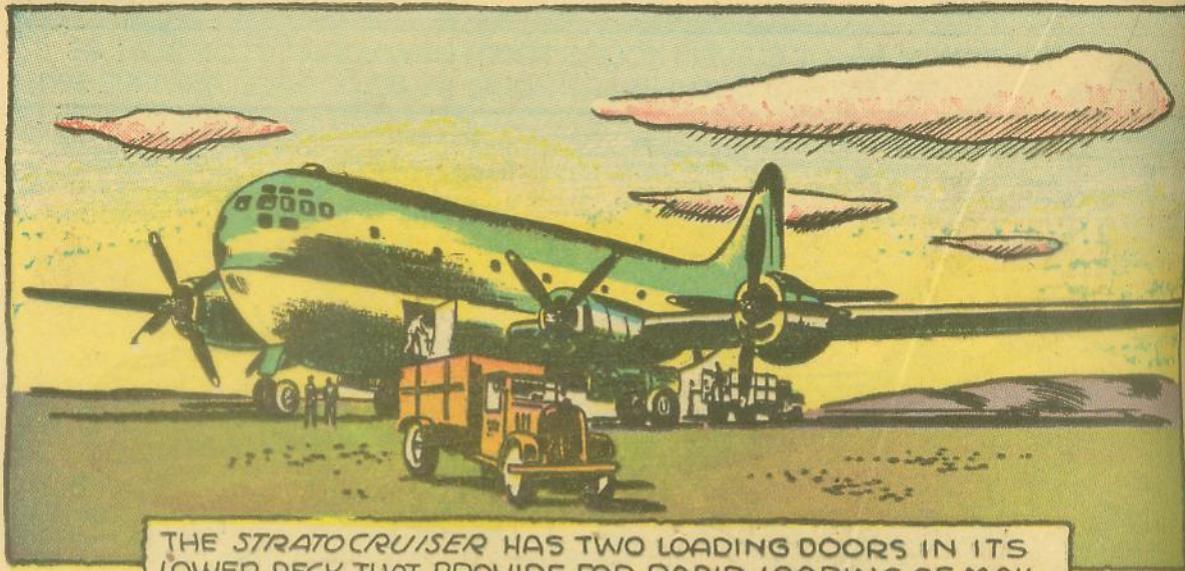
SEA-LEVEL COMFORT
IN THE STRATOSPHERE



AS THIS STORY OF THE STRATOCRUISER WAS BEING PREPARED, NEWS CAME IN THAT PAN AMERICAN WORLD AIRWAYS HAD BECOME THE FIRST PURCHASER OF THE GIANT NEW BOEING AIRLINERS.

ON NOVEMBER 28, 1945, PAN AMERICAN CONTRACTED FOR 20 STRATOCRUISERS AT A COST OF OVER 25 MILLION DOLLARS.

PAN AMERICAN WILL USE THE BIG SHIPS FOR NON-STOP HOPS TO EUROPE AND PROBABLY TO HAWAII. THE PRESSURIZED CABINS OF THE STRATOCRUISERS PERMIT THEM TO FLY OVER BAD WEATHER, AND THEIR HIGH SPEED ALLOWS THEM TO GO AROUND A BIG STORM WHEN NECESSARY.



THE STRATOCRUISER HAS TWO LOADING DOORS IN ITS LOWER DECK THAT PROVIDE FOR RAPID LOADING OF MAIL, EXPRESS, AND CARGO. THE PLANE CAN BE LOADED QUICKLY WITH OUT INTERRUPTING PASSENGER LOADING.



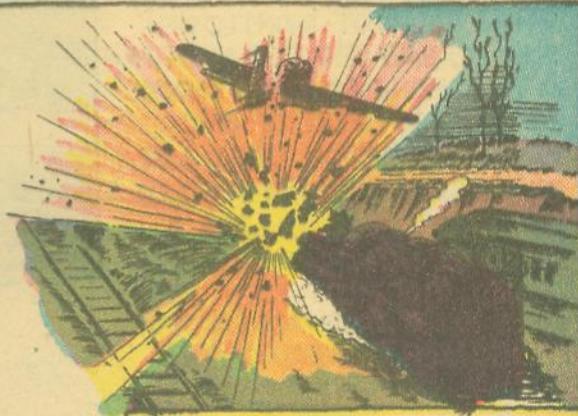
WEEKENDS IN HAWAII, PARIS OR LONDON WILL SOON BE COMMONPLACE EVENTS WHEN THE STRATOCRUISERS GO INTO SERVICE NEXT YEAR. WHETHER YOU PLAN TO VACATION IN EUROPE, RUSSIA, CHINA OR AUSTRALIA YOU WILL NOT HAVE TO SPEND ALL OF IT IN TRAVELING. IT WILL BE ONLY A MATTER OF HOURS TO ANY PLACE IN THE WORLD BY STRATOCRUISER.

IT REALLY HAPPENED



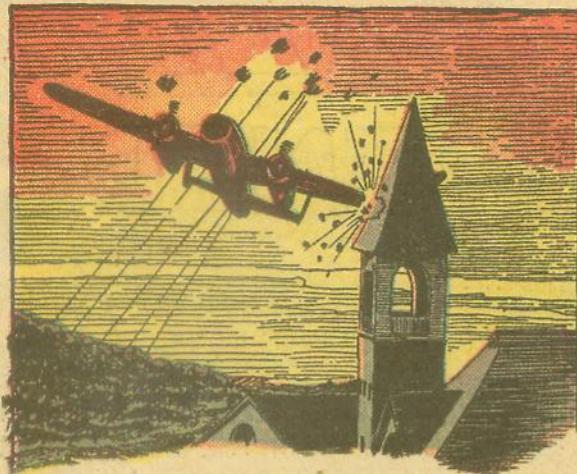
OF ALL THE STORIES OF UNUSUAL HAPPENINGS IN WORLD WAR II, NONE ARE STRANGER OR MORE THRILLING THAN THE ONES THAT COME FROM THE BATTLEFIELDS IN THE SKIES. A B-25 MITCHELL BOMBER CAME BACK FROM A MISSION IN ITALY AFTER A DIRECT HIT FROM A CANNON SHELL AND WITH 400 HOLES IN THE VITAL PARTS OF THE PLANE.

SMASHING ENEMY LOCOMOTIVES IN WORLD WAR II WAS AN EXCITING BUT DANGEROUS SPORT. A P-51 PILOT IN ITALY, HAD A WHOLE AMMUNITION TRAIN EXPLODE DIRECTLY UNDER HIS PLANE, THE BLAST BLEW THE FABRIC OUT OF THE ELEVATOR AND RUDDER AND HURLED METAL THROUGH THE RADIATOR AIR SCOUR AND THE WING SURFACES. ONE OUTER WING TIP WAS SMASHED AND THE LEADING EDGE WAS FLATTENED. THE PILOT FLEW HIS SMASHED PLANE FOR TWO AND ONE-HALF HOURS TO LAND SAFELY AT HIS BASE.



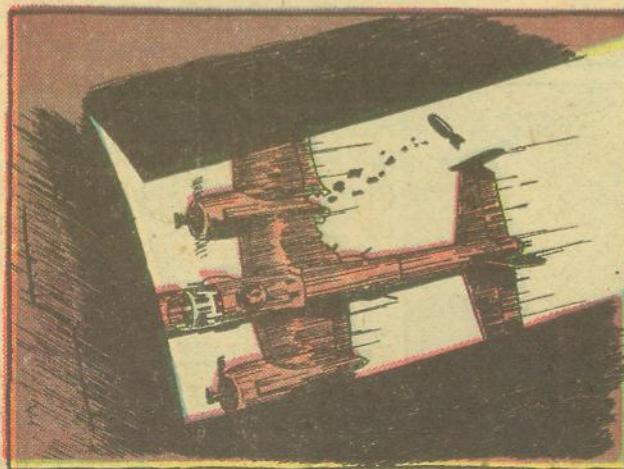
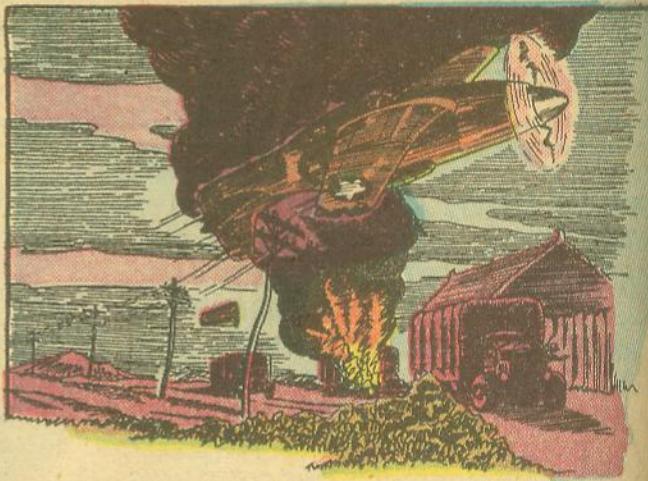
AFTER RUNNING INTO A GROUP OF NAZI FIGHTERS, WHILE HE WAS ON A PHOTOGRAPHIC MISSION, A P-51 PILOT FLEW BACK TO HIS BASE WITH HIS PLANE LOOKING LIKE A PIECE OF "SWISS CHEESE". A 20 MILLIMETER SHELL HAD BLOWN A SIX-INCH HOLE IN THE RIGHT WING, ANOTHER SHELL SMASHED THE STABILIZER FAIRING, SHATTERING ONE SET OF ELEVATOR CABLES AND A 50-CALIBER SHELL BURST IN THE UPPER STABILIZER FIN.



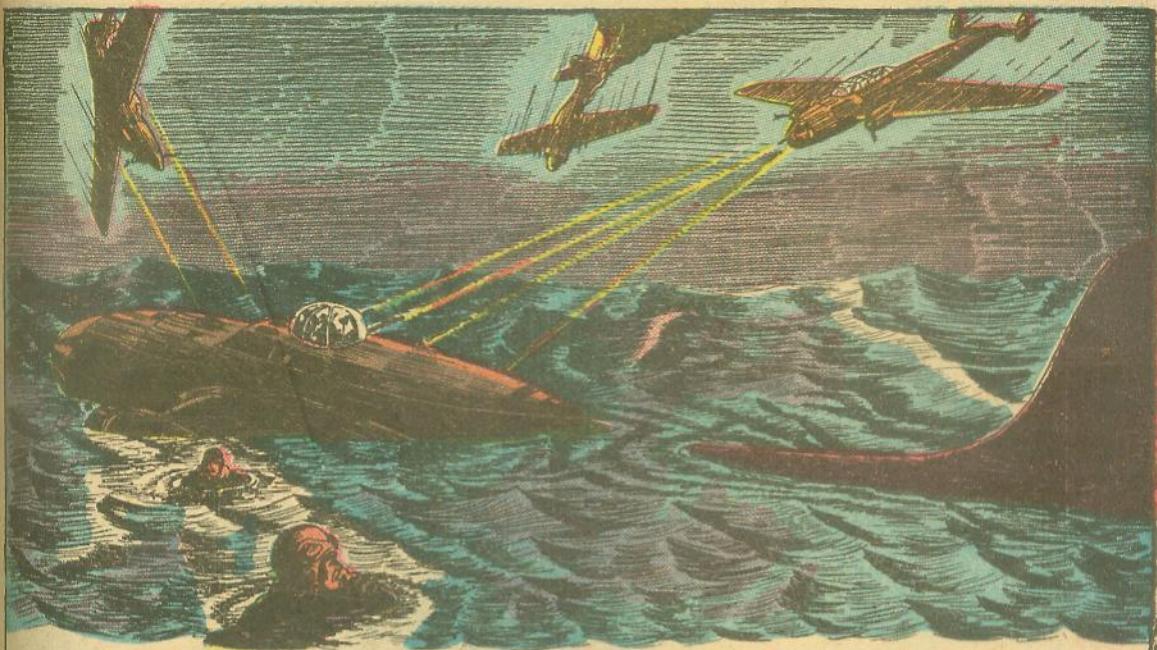


AFTER A SUCCESSFUL BRIDGE-BUSTING MISSION DEEP IN BURMA, A B-25 'MITCHELL' RAN INTO AN AREA OF INTENSE ANTI-AIRCRAFT FIRE. THE PILOT THREW THE SHIP INTO EVASIVE ACTION AND DIVED LOW TO ESCAPE THE ENEMY'S FIRE. HE HAD FLOWN ALMOST CLEAR OF DANGER, WHEN HE RAN INTO A CHURCH STEEPLE. THE IMPACT SHEARED OFF FOUR FEET OF ONE OF THE WINGS OF THE B-25 AND WRENCHED LOOSE PART OF THE AILERON: ALTHOUGH HIS BASE WAS SEVERAL HUNDRED MILES AWAY, THE PILOT BROUGHT HIS B-25 AND ITS CREW HOME TO SAFETY.

A P-51 ON A STRAFING MISSION, FLYING LOW OVER AN ENEMY TRANSPORT COLUMN, HIT SOMETHING THAT FLIPPED THE PLANE OVER ON ITS BACK. WHEN THE PILOT RIGHTED HIS SHIP, HE SAW THAT HE HAD HIT A TELEPHONE POLE AND KNOCKED OFF FOUR FEET OF ONE WING. THE AILERON COULD NOT BE USED AND THE SHIP WOULD NOT STAY LEVEL UNLESS A SPEED OF 170 M.P.H. WAS MAINTAINED. THE PILOT FLEW 350 MILES TO HIS BASE AND LANDED AT 180 M.P.H. (INSTEAD OF THE NORMAL 85 M.P.H.)



EVEN A DIRECT BOMB HIT COULD NOT DOWN A B-25 IN THE SOUTH PACIFIC, THAT FLEW UNDER A FALLING BOMB. THE MISSILE HIT THE TOP OF THE FUSELAGE BETWEEN THE PILOTS HATCH AND FORWARD OF THE UPPER TURRET. IT THEN BOUNCHED OFF AND HIT THE CENTER SECTION BETWEEN THE RIGHT NACELLE AND FUSELAGE, CAUSING EXTENSIVE DAMAGE—AND FINALLY ROLLED OFF THE EDGE OF THE RIGHT WING.



RETURNING FROM A RAID ON GERMANY, A CRIPPLED FORTRESS WAS FORCED INTO THE CHANNEL BY NAZI FIGHTERS. THE CREW TUMBLED INTO THE SEA AND SWAM TOWARD RAFTS WITH THE ENEMY FIGHTERS SHOWERING THEM WITH LEAD. BUT THE TOP GUNNER, SEEING HIS COMRADES PLIGHT STUCK WITH THE PLANE AND BLAZED AWAY. BUT THE FORTRESS WAS SINKING FAST. AS THE SEA CLOSED IN OVER THE GALLANT GUNNER, HIS 'FIFTIES' WERE STILL BLAZING.

ANOTHER CRIPPLED FORTRESS MADE AN EMERGENCY LANDING THAT TORE THE BALL TURRET OUT OF THE BELLY OF THE SHIP. THE TURRET AND ITS GUNNER OCCUPANT WERE SPUN ACROSS A BOULDER-STREWN PASTURE. BELIEVE IT OR NOT, THE GUNNER WAS NOT BADLY HURT WHEN THEY PULLED HIM OUT OF THE TURRET WHICH HAD COME TO REST IN THICK BUSHES.

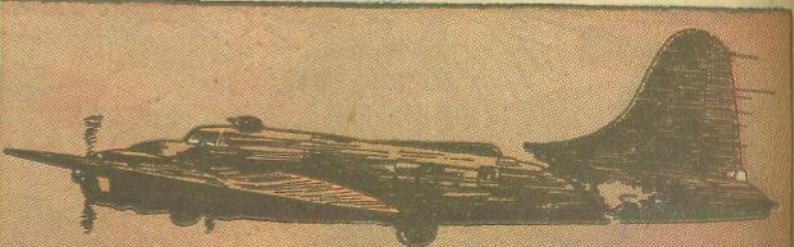




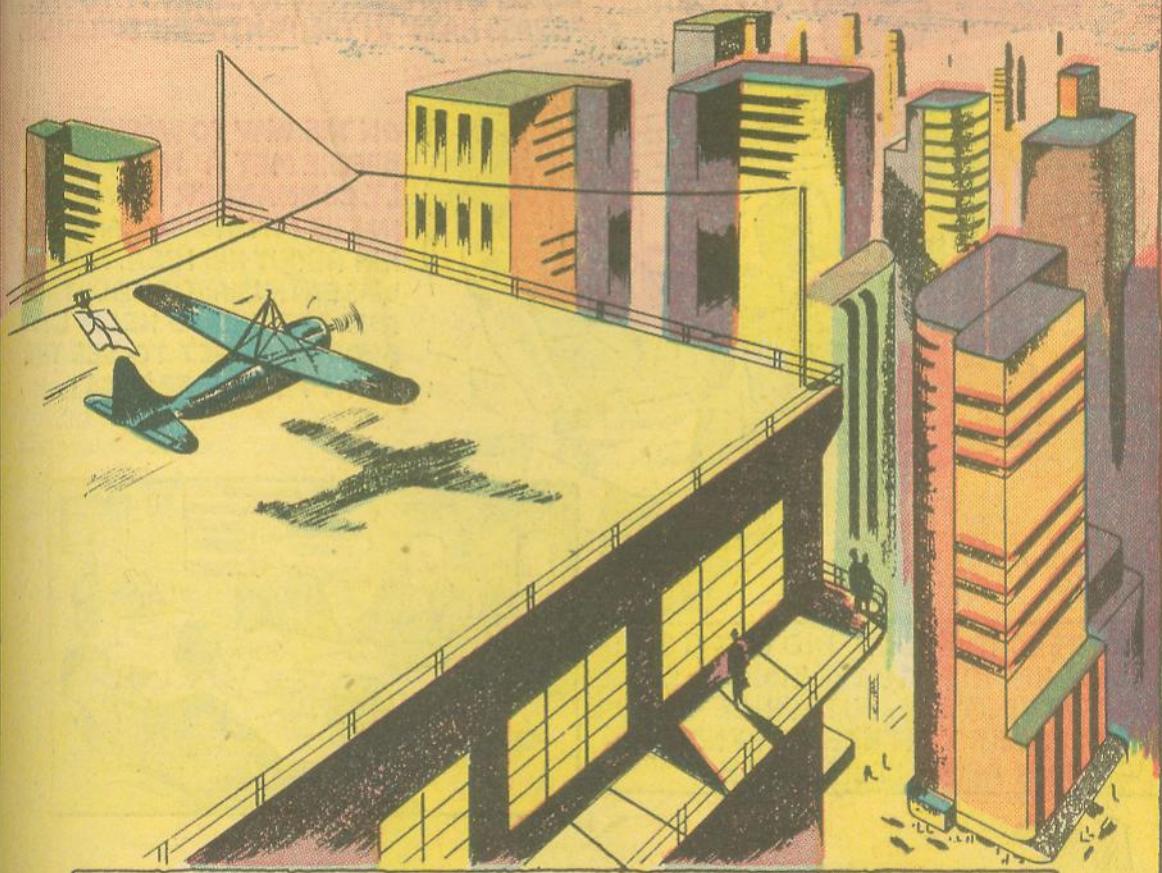
YOU HAVE PROBABLY HEARD THE STORY OF THE TAIL GUNNER IN A B-17 FLYING FORTRESS WHO FLOATED DOWN TO EARTH WHEN THE TAIL SECTION WAS SEVERED FROM THE SHIP BY ENEMY SHELLS. HE RODE THE TAIL SECTION AS IT SPUN EARTHWARD EXPECTING DEATH WHEN IT CRASHED TO EARTH. BUT IT LANDED IN A HAYSTACK AND THE GUNNER WAS ONLY BANGED UP A LITTLE BIT.

THERE IS ANOTHER STORY OF A TAIL GUNNER IN A SIMILAR SITUATION. ONLY AS THIS TAIL SECTION FLOATED DOWN IT WAS ATTACKED BY NAZI FIGHTERS. THE GUNNER STUCK TO HIS POST AND FOUGHT IT OUT WITH THE FOCKE-WULFS UNTIL HIS AMMUNITION GAVE OUT. HE THEN PARACHUTED SAFELY TO THE GROUND.

ANOTHER B-17 WAS PRACTICALLY SLASHED IN TWO BY A NAZI FIGHTER THAT CRASHED INTO IT. THEORETICALLY SUCH A PLANE COULD NOT FLY. BUT ITS PILOT AND CREW FLEW THE FORTRESS FOR AN HOUR AND THREE-QUARTERS—BACK TO HER BASE FOR A PERFECT LANDING.



A FLYING TRAPEZE for AIRPLANES



PILOTS HAVE OFTEN USED THE EXPRESSION "HE CAN LAND A PLANE ON A DIME". NOW THEY CAN GO ONE BETTER AND SAY "HE CAN LAND ON A WIRE". AND THANKS TO CAPTAIN JAMES H. BRODIE, U.S. ARMY AIR FORCES, A PILOT CAN LAND ON A WIRE, COME TO A STOP, THEN GUN HIS ENGINE AND TAKE OFF AGAIN WITHOUT EVER TOUCHING THE GROUND. CAPTAIN BRODIE'S FLYING TRAPEZE WILL MAKE IT POSSIBLE FOR AIRPLANES TO LAND ON AND TAKE OFF FROM THE ROOFS OF BUILDINGS, SHIPS AT SEA, OR ISOLATED JUNGLES AND MOUNTAIN TOPS.

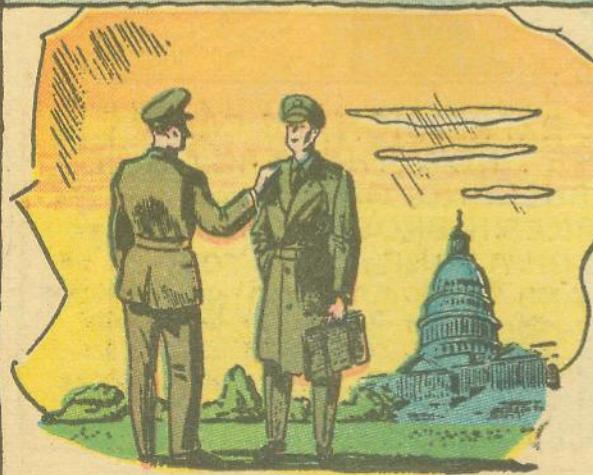


JAMES BRODIE, TRAINED IN ENGINEERING AT THE UNIVERSITY OF MINNESOTA, WAS A LIEUTENANT IN THE ARMY. WITH AN ASSIGNMENT TO REDESIGN CARGO SHIPS FOR THE TRANSPORTATION CORPS. IN 1942, BRODIE WORKED OUT A MOST UNUSUAL SCHEME FOR LAUNCHING AND LANDING LIGHT PLANES. HIS SUPERIORS THOUGHT WELL ENOUGH OF HIS IDEA TO LET HIM GO TO WASHINGTON TO SHOW IT TO THE "BRASS HATS" IN THE PENTAGON BUILDING.

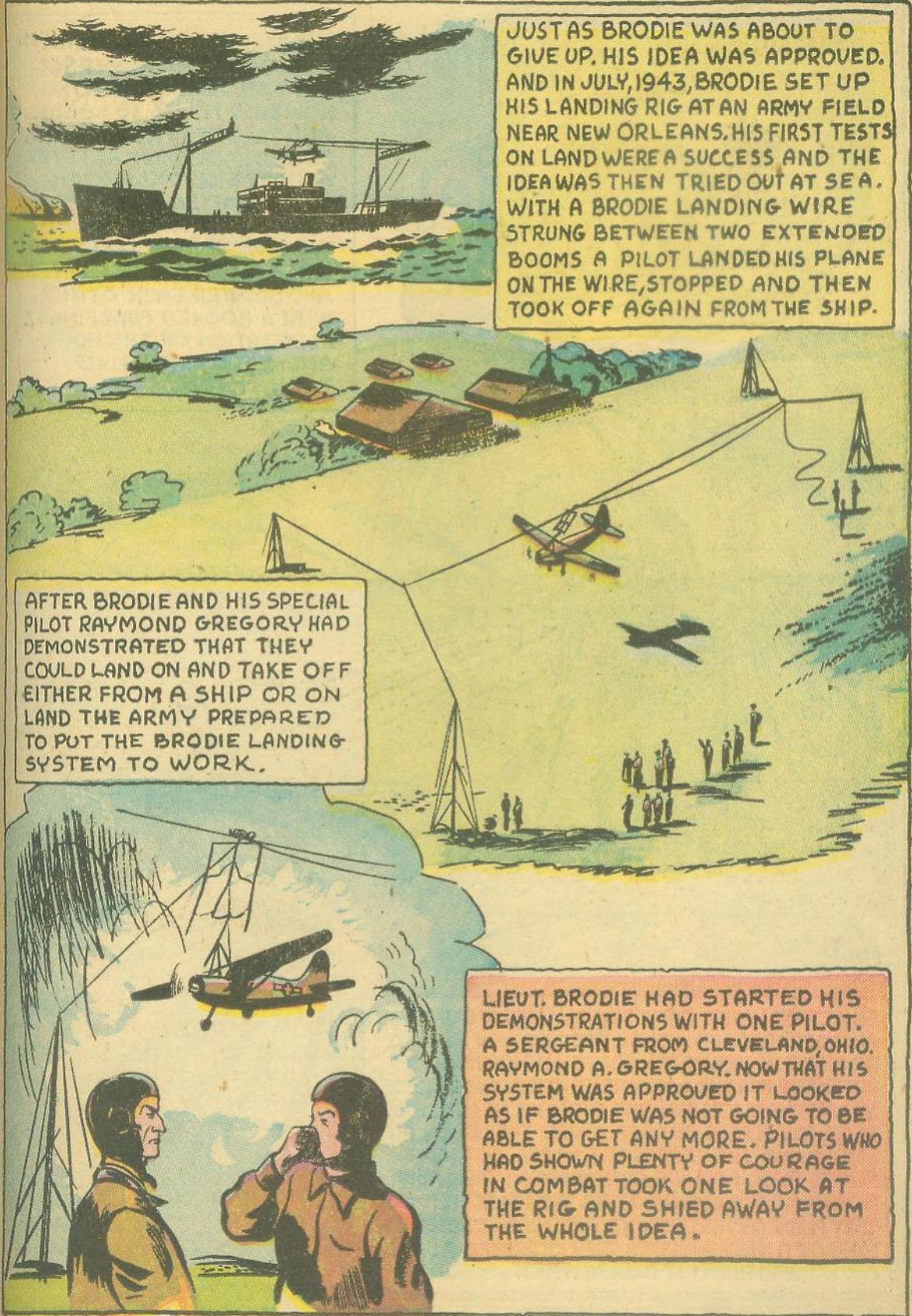


ON THE WAY TO WASHINGTON BRODIE MET A NAVY MAN, LT. COMMANDER TAYLOR, IN THE DINING CAR, AND TOLD HIM ABOUT HIS IDEA. TAYLOR WAS ENTHUSIASTIC ABOUT IT AND OFFERED TO HELP LT. BRODIE TO GET TO SEE THE RIGHT PEOPLE ABOUT IT.

LIEUTENANT BRODIE DID GET TO SHOW HIS IDEA TO THE HIGHER-UPS IN WASHINGTON, BUT WHILE THE IDEA LOOKED INTERESTING NOTHING WAS DONE ABOUT IT AT ONCE.

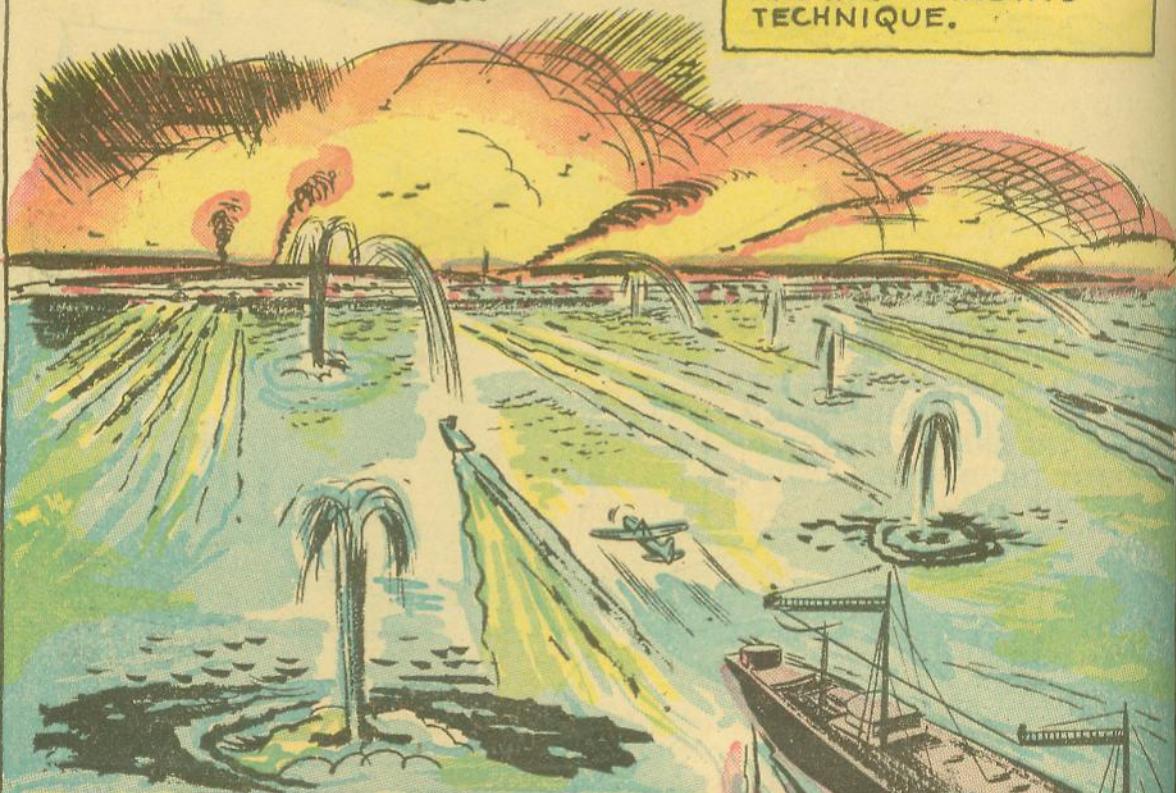


BRODIE SOON FOUND THAT DEVELOPING AN UNUSUAL IDEA WAS SIMPLE COMPARED WITH SELLING IT TO THE "BRASS HATS" HIS IDEA WAS TOSSSED AROUND LIKE A FOOTBALL AT CONFERENCE AFTER CONFERENCE, BUT NO ONE CAUGHT IT. HE BEGAN TO GET DISCOURAGED AND WAS READY TO GO BACK TO DESIGNING CARGO SHIPPING SPACE.





BUT BRODIE KEPT ON IMPROVING HIS SYSTEM AND GREGORY KEPT ON DEMONSTRATING HOW EASY IT WAS TO LAND ON AND TAKE OFF FROM A WIRE. SO, NOW, MANY MONTHS LATER, AT FORT SILL, OKLAHOMA, MANY LIAISON PILOTS WERE TRAINING TO MAKE USE OF THE BRODIE IDEA. THESE BOYS WORE THEIR CAPS COCKEYED AND SALUTED EACH OTHER WITH A HOOKED FOREFINGER IN IMITATION OF THE HOOK-AND-WIRE LANDING TECHNIQUE.

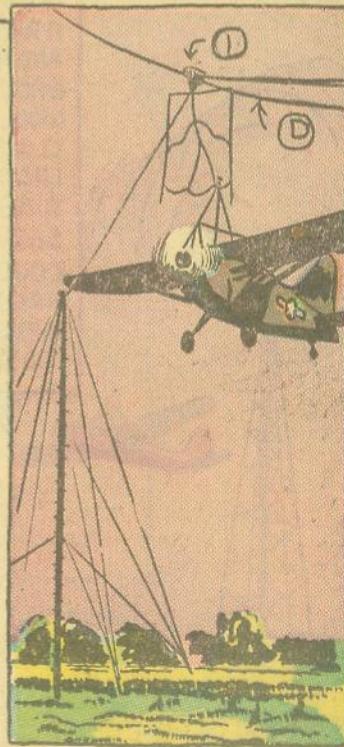


SOMETIME LATER CAME THE INVASION OF OKINAWA. PHOTOGRAPHY AND AERIAL OBSERVATION HAD TO BE MADE IN ORDER TO SOFTEN UP OKINAWA'S DEFENSES FOR THE LANDING PARTIES. THERE WERE NO LANDING PLACES FOR AIRPLANES THIS MEANT LOSING PILOTS AND PLANES. BUT OFF SHORE THERE WAS AN LST CALLED THE BRODIE LST NO. 776. SO LIGHT PLANES BEGAN FLYING SORTIES FROM THEIR SHIP-BOARD WIRE LANDING STRIP. THEY TOOK PICTURES, THEY MADE OBSERVATIONS, THEY DROPPED NOTES AND MAPS ON A NAVY FLAGSHIP. THEY RETURNED AGAIN AND AGAIN TO THEIR LST AND NOT A PILOT WAS LOST.



THE BRODIE SYSTEM CONSISTS OF FOUR METAL SUPPORTING MASTS (A), EACH ABOUT TWICE AS HIGH AS A TELEPHONE POLE. THE MASTS ARE SET UP IN A RECTANGLE AND THE POLES ARE SPACED 160 FEET APART TO ALLOW FOR THE PLANE'S WINGSPAN. THE PLANE COMES IN BETWEEN THE MASTS (B). THE PLANE FLIES IN UNDER A 500-FOOT CABLE (C). THE HOOK ON THE PLANE (LEFT) ENGAGES A LARGE NYLON LOOP OR SLING (2) RIGHT. A SINGLE-WHEEL TROLLEY (1) RIGHT) SUPPORTS THE AIRPLANE ON THE WIRE. AN ARRESTING BRAKE LINE (D) BRINGS THE AIRPLANE UPON LANDING TO A GRADUAL STOP, WITHOUT A NOTICEABLE SHOCK.

ON THE TAKE-OFF THE PILOT GUNS THE ENGINE AND GROUND CREWMEN TRIP THE RELEASE AND THE PLANE BEGINS TROLLEY TAKE-OFF RUN. THE PILOT RELEASES THE HOOK FROM THE TROLLEY AND IS AIRBORNE. THE TAKE-OFF RUN IS FROM 200 TO 400 FEET.





JAMES BRODIE WAS PROMOTED TO THE RANK OF CAPTAIN AND RAY GREGORY WAS MADE A FLIGHT OFFICER. BOTH WERE AWARDED THE LEGION OF MERIT. THE BRODIE SYSTEM OFFERS A NUMBER OF POSSIBILITIES FOR PEACETIME USE. SHIP TO SHORE TRANSPORTATION FOR THE DELIVERY OF RUSH MAIL AND PASSENGERS IS ONE OF THEM. A LIGHT PLANE BASED ON A WHALER COULD ACCURATELY SPOT WHALES AND RADIO THEIR LOCATION TO THE SHIP. BRODIE RIGS SET UP NEAR LIGHTHOUSES WOULD BRING THEIR ISOLATED ATTENDANTS CLOSER TO LAND. FORESTRY STATIONS LOCATED ON ISOLATED MOUNTAIN TOPS AND INACCESSIBLE FORESTS, COULD BE SERVED BY THE BRODIE SYSTEM. RIGS COULD BE SET UP NEAR OIL WELLS WHICH ARE LOCATED AT SEA, WOULD PERMIT WORKERS AND SUPPLIES TO BE FLOWN TO THE WELLS.

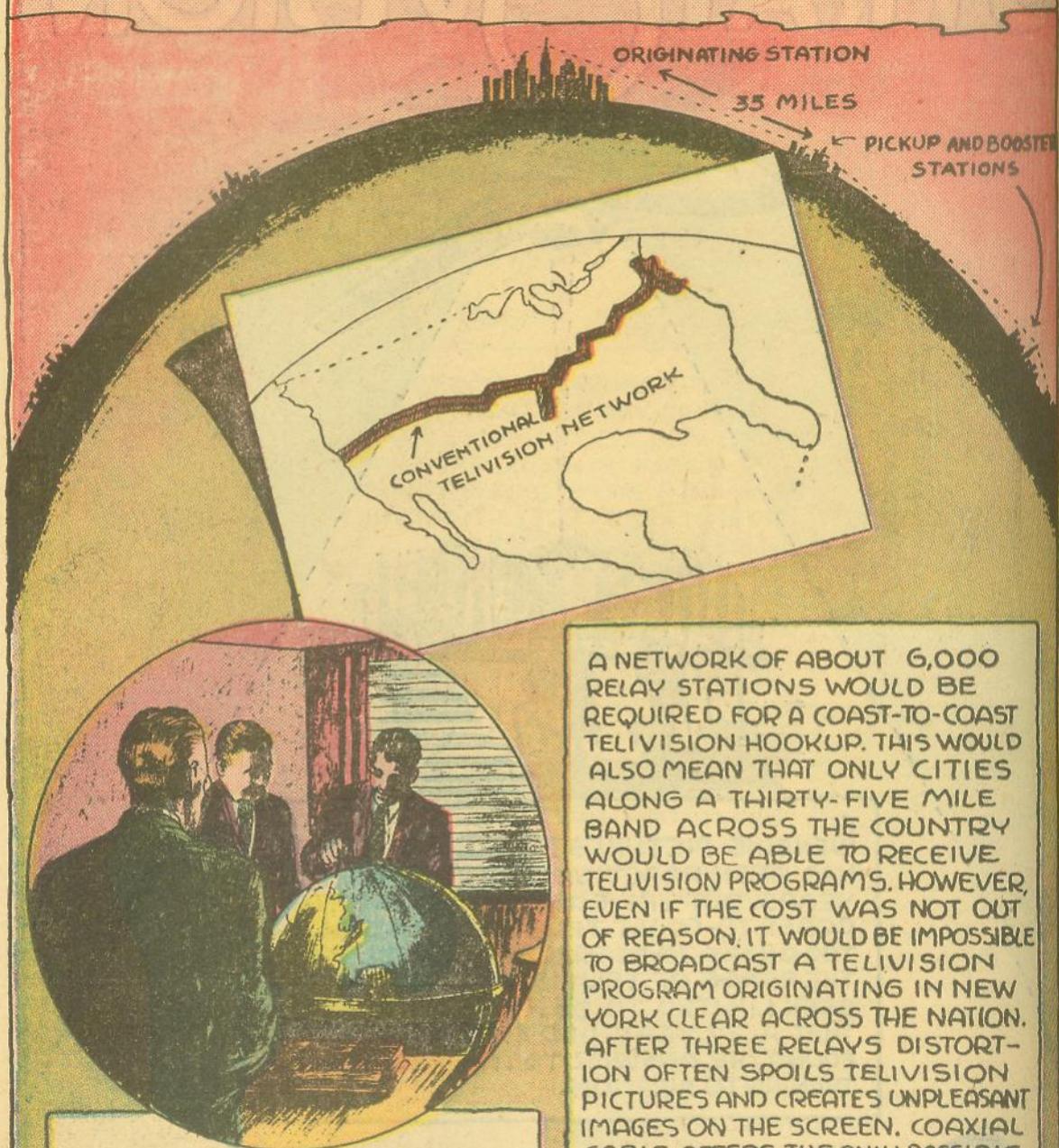
STRATOVISION



SENDING PICTURES THROUGH THE SKY HAS BEEN PRACTICAL FOR AT LEAST TEN YEARS. BUT THE COST OF PRODUCING COAST-TO-COAST TELIVISION HAS BEEN TOO GREAT TO BE PRACTICAL. IN THE PAST, THE RANGE OF TELIVISION PROGRAMS HAS BEEN LIMITED TO 35 MILES. IT SEEMS THAT A 27 YEAR OLD ENGINEER HAS NOW FOUND THE ANSWER TO THIS PROBLEM BY TURNING TO AVIATION.



WITH THE RANGE OF TELEVISION PROGRAMS LIMITED TO 35 MILES, IT WOULD BE NECESSARY TO BUILD A CHAIN OF PICKUP AND BOOSTER STATIONS AT SHORT INTERVALS ACROSS THE COUNTRY FOR A TELEVISION NETWORK

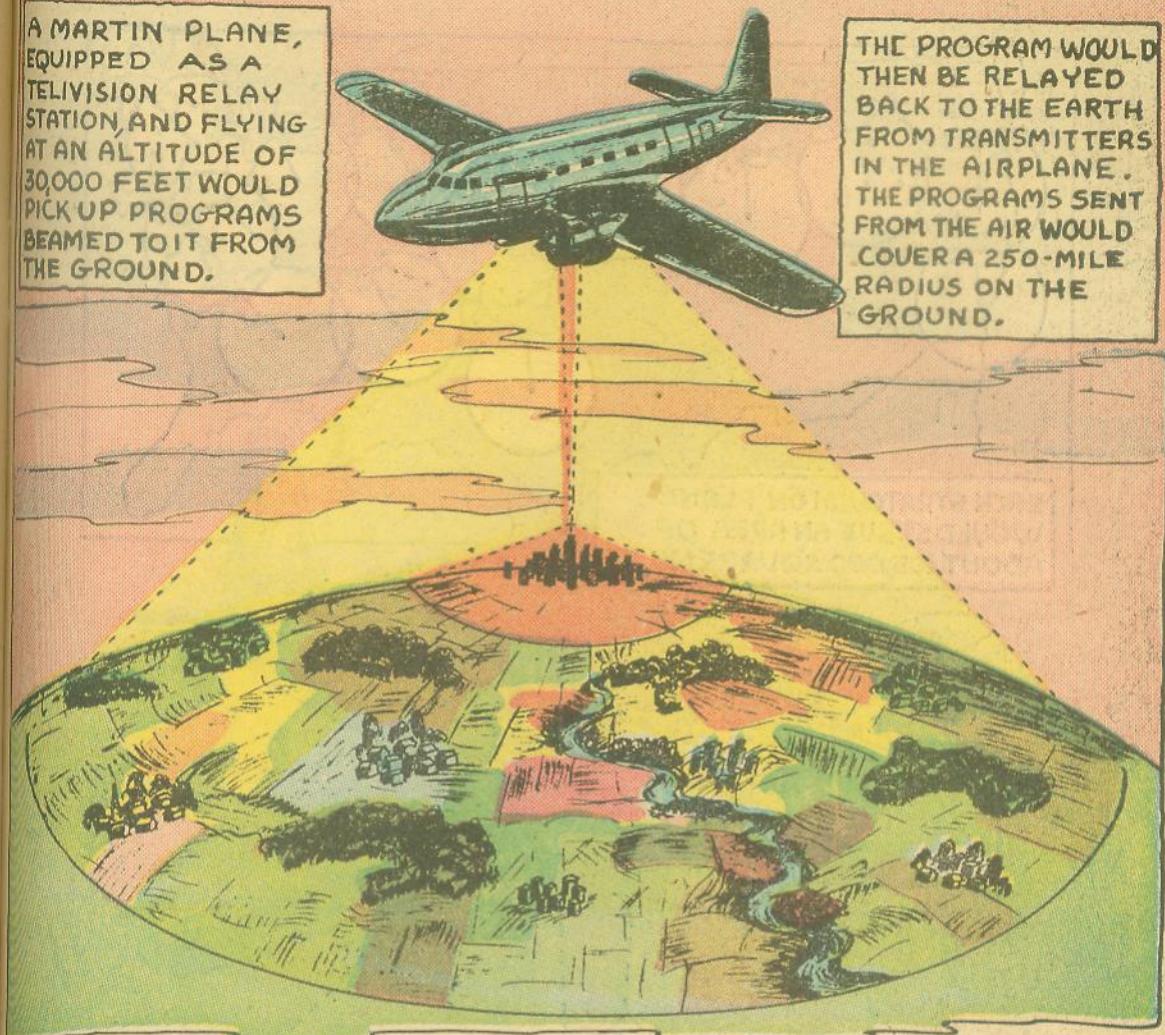


YOUNG NOBLE'S ANSWER TO THIS PROBLEM INTERESTED THE HEAD MEN AT WESTINGHOUSE AND THE GLENN L. MARTIN AIRCRAFT COMPANY, SUFFICIENTLY TO WARRANT THOSE COMPANIES TO PROCEED WITH FURTHER RESEARCH ON THE IDEA.

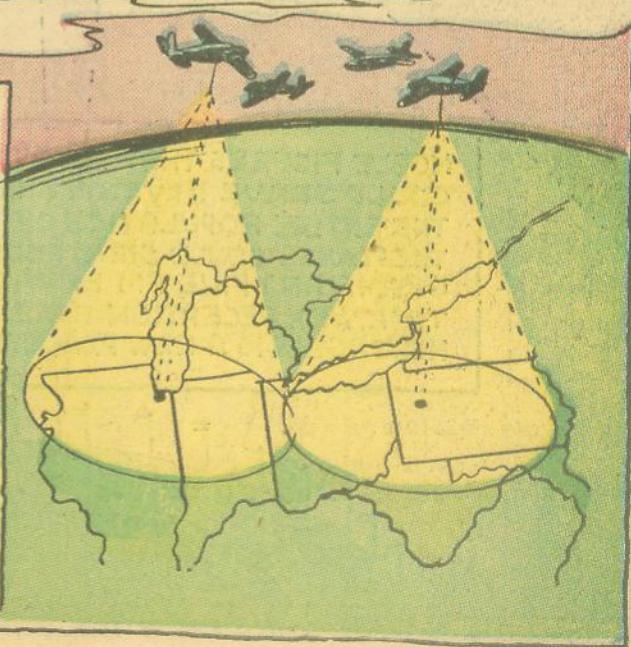
A NETWORK OF ABOUT 6,000 RELAY STATIONS WOULD BE REQUIRED FOR A COAST-TO-COAST TELEVISION HOOKUP. THIS WOULD ALSO MEAN THAT ONLY CITIES ALONG A THIRTY-FIVE MILE BAND ACROSS THE COUNTRY WOULD BE ABLE TO RECEIVE TELEVISION PROGRAMS. HOWEVER, EVEN IF THE COST WAS NOT OUT OF REASON, IT WOULD BE IMPOSSIBLE TO BROADCAST A TELEVISION PROGRAM ORIGINATING IN NEW YORK CLEAR ACROSS THE NATION. AFTER THREE RELAYS DISTORTION OFTEN SPOILS TELEVISION PICTURES AND CREATES UNPLEASANT IMAGES ON THE SCREEN. COAXIAL CABLE OFFERS THE ONLY POSSIBLE METHOD OF TELEVISION TRANSMISSION FOR LONG-DISTANCE PRESENTATION. COAXIAL CABLE COSTS ABOUT \$3.00 PER FOOT. SO IT WOULD COST \$100,000,000 TO TIE NEW YORK AND HOLLYWOOD TOGETHER.

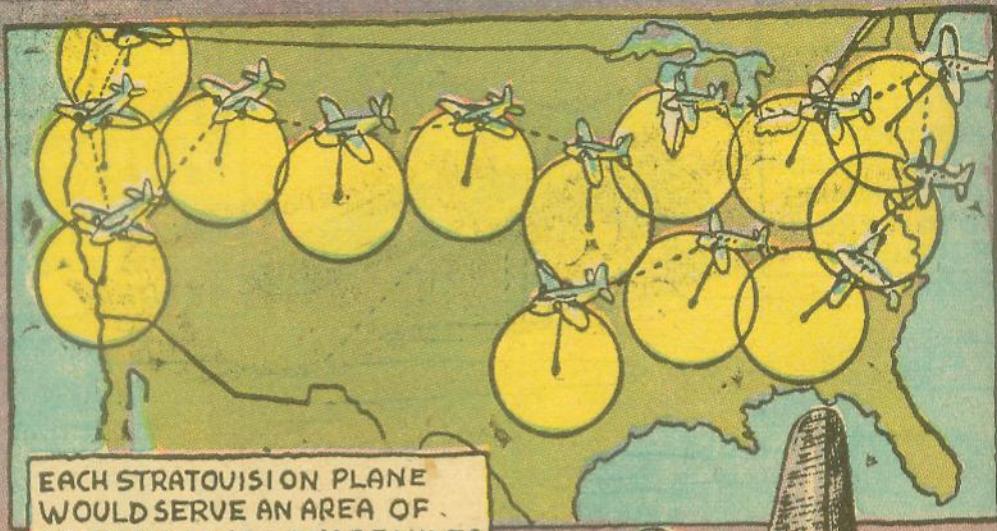
A MARTIN PLANE, EQUIPPED AS A TELEVISION RELAY STATION, AND FLYING AT AN ALTITUDE OF 30,000 FEET WOULD PICK UP PROGRAMS BEAMED TO IT FROM THE GROUND.

THE PROGRAM WOULD THEN BE RELAYED BACK TO THE EARTH FROM TRANSMITTERS IN THE AIRPLANE. THE PROGRAMS SENT FROM THE AIR WOULD COVER A 250-MILE RADIUS ON THE GROUND.

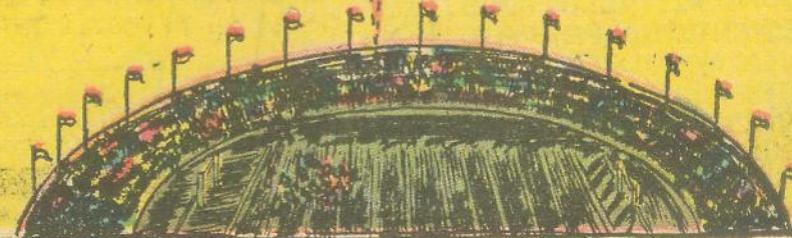


WITH C. E. NOBLES PLAN, PROGRAMS WHICH REACHED ONLY 35 MILES ON THE GROUND WOULD COVER A RADIUS OF 250 MILES WHEN TRANSMITTED BY LOW-POWERED STATIONS IN AIRPLANES. THE MOST ELABORATE PLANES THAT THE MARTIN COMPANY COULD BUILD WOULD NOT APPROACH THE COST OF GROUND INSTALLATIONS. THE SAME CONDITIONS PREVAIL IN FREQUENCY MODULATION, F.M. BROADCASTING AS IN TELEVISION. THE AIRPLANES WOULD BE EQUIPPED TO SEND F.M. BROADCASTS AS WELL AS TELEVISION PROGRAMS.





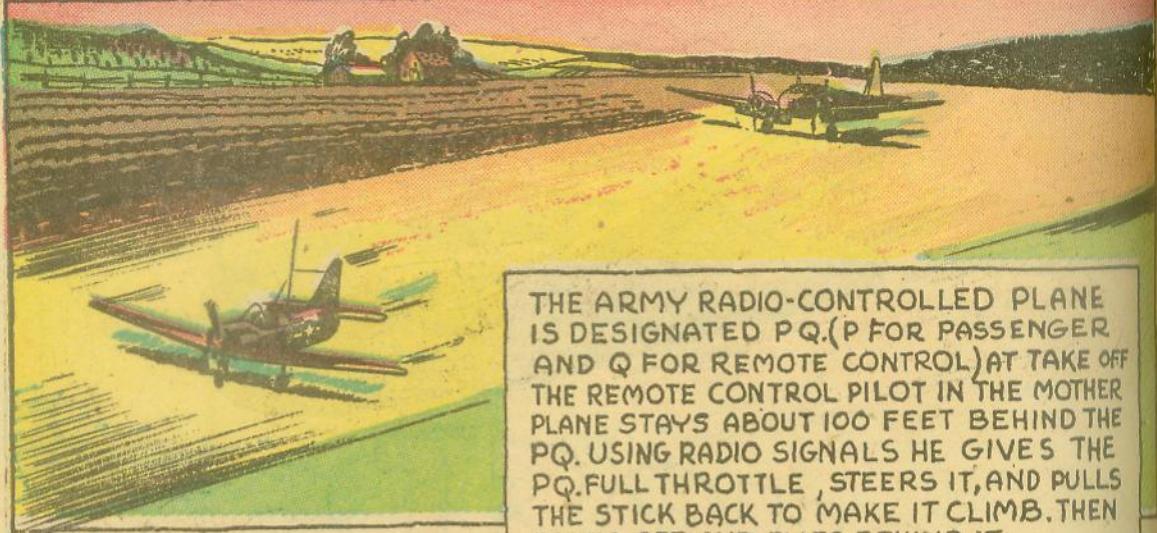
NOBLE FIGURES THAT FOURTEEN AIRPLANES
COULD SERVE SEVENTY EIGHT PERCENT OF
THE ENTIRE POPULATION OF THE UNITED STATES.
THE PLANES COULD SEND FOUR TELEVISION PRO-
GRAMS AND FIVE FM BROADCASTS AT ONE
TIME, WITH RECEPTION FREE FROM DISTORTION.
HERE AGAIN IS A NEW PEACETIME USE FOR PLANES.



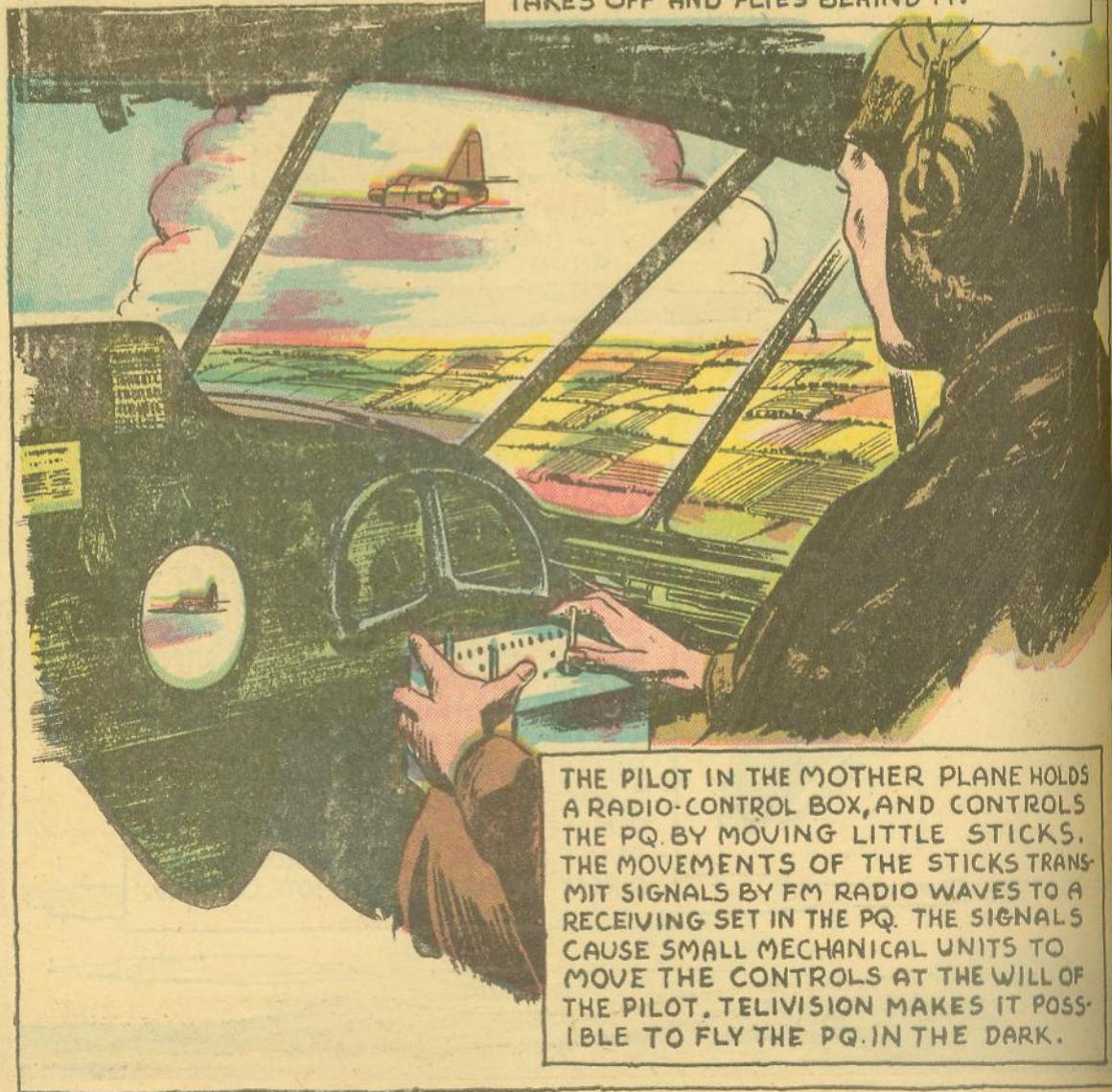


GH~~O~~ST PLANE

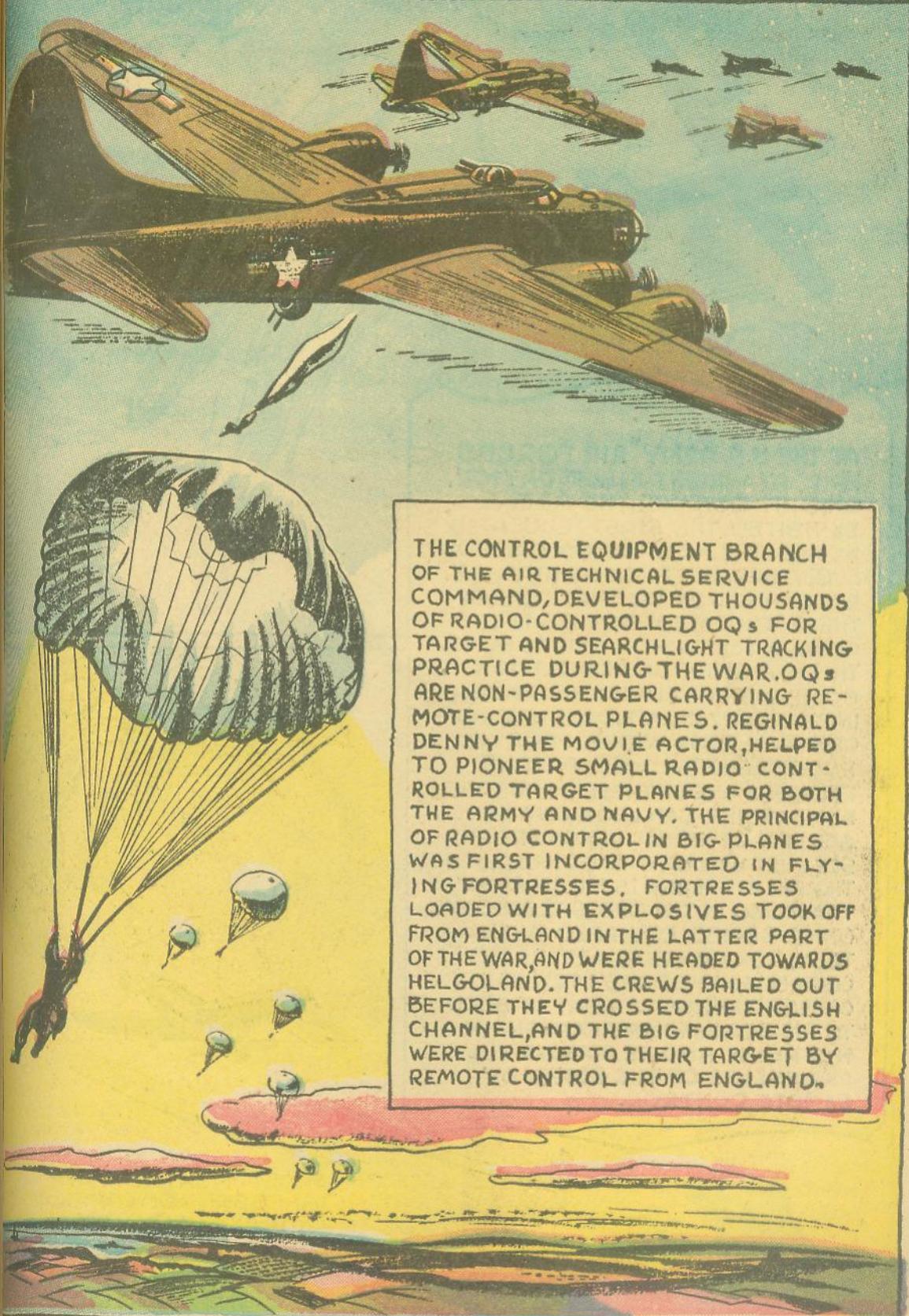
IT GIVES A PILOT AN UNCANNY FEELING TO SEE A PILOTLESS FIGHTER PLANE DIVE OUT OF A CLOUD AND HEAD FOR HIM. THE U.S. NAVY HAS JUST DISCLOSED THE PERFECTION OF A PLANE THAT "FIGHTS WITHOUT A PILOT." BOTH THE ARMY AND THE NAVY HAVE USED SMALL RADIO-CONTROLLED TARGET PLANES BUT THE NAVY'S FIGHTER IS A BIG 2100-HORSEPOWER GRUMMAN "HELLCAT". THE ARMY ALSO HAS A FULL-SIZED RADIO-CONTROLLED PLANE. THE DEVELOPMENT OF RADIO AND REMOTE CONTROL HAS REACHED A POINT WHERE A BOMBARDIER CAN DIRECT BOMBS BY REMOTE CONTROL.



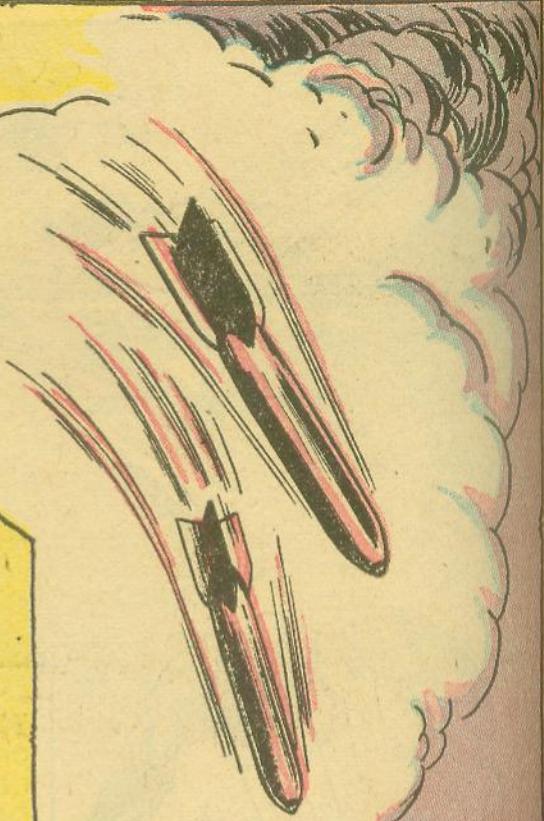
THE ARMY RADIO-CONTROLLED PLANE IS DESIGNATED PQ. (P FOR PASSENGER AND Q FOR REMOTE CONTROL) AT TAKE OFF THE REMOTE CONTROL PILOT IN THE MOTHER PLANE STAYS ABOUT 100 FEET BEHIND THE PQ. USING RADIO SIGNALS HE GIVES THE PQ. FULL THROTTLE, STEERS IT, AND PULLS THE STICK BACK TO MAKE IT CLIMB. THEN TAKES OFF AND FLIES BEHIND IT.



THE PILOT IN THE MOTHER PLANE HOLDS A RADIO-CONTROL BOX, AND CONTROLS THE PQ. BY MOVING LITTLE STICKS. THE MOVEMENTS OF THE STICKS TRANSMIT SIGNALS BY FM RADIO WAVES TO A RECEIVING SET IN THE PQ. THE SIGNALS CAUSE SMALL MECHANICAL UNITS TO MOVE THE CONTROLS AT THE WILL OF THE PILOT. TELIVISION MAKES IT POSSIBLE TO FLY THE PQ. IN THE DARK.



THE CONTROL EQUIPMENT BRANCH OF THE AIR TECHNICAL SERVICE COMMAND, DEVELOPED THOUSANDS OF RADIO-CONTROLLED OQ's FOR TARGET AND SEARCHLIGHT TRACKING PRACTICE DURING THE WAR. OQ's ARE NON-PASSENGER CARRYING REMOTE-CONTROL PLANES. REGINALD DENNY THE MOVIE ACTOR, HELPED TO PIONEER SMALL RADIO CONTROLLED TARGET PLANES FOR BOTH THE ARMY AND NAVY. THE PRINCIPAL OF RADIO CONTROL IN BIG PLANES WAS FIRST INCORPORATED IN FLYING FORTRESSES. FORTRESSES LOADED WITH EXPLOSIVES TOOK OFF FROM ENGLAND IN THE LATTER PART OF THE WAR, AND WERE HEADED TOWARDS HELGOLAND. THE CREWS BAILED OUT BEFORE THEY CROSSED THE ENGLISH CHANNEL, AND THE BIG FORTRESSES WERE DIRECTED TO THEIR TARGET BY REMOTE CONTROL FROM ENGLAND.

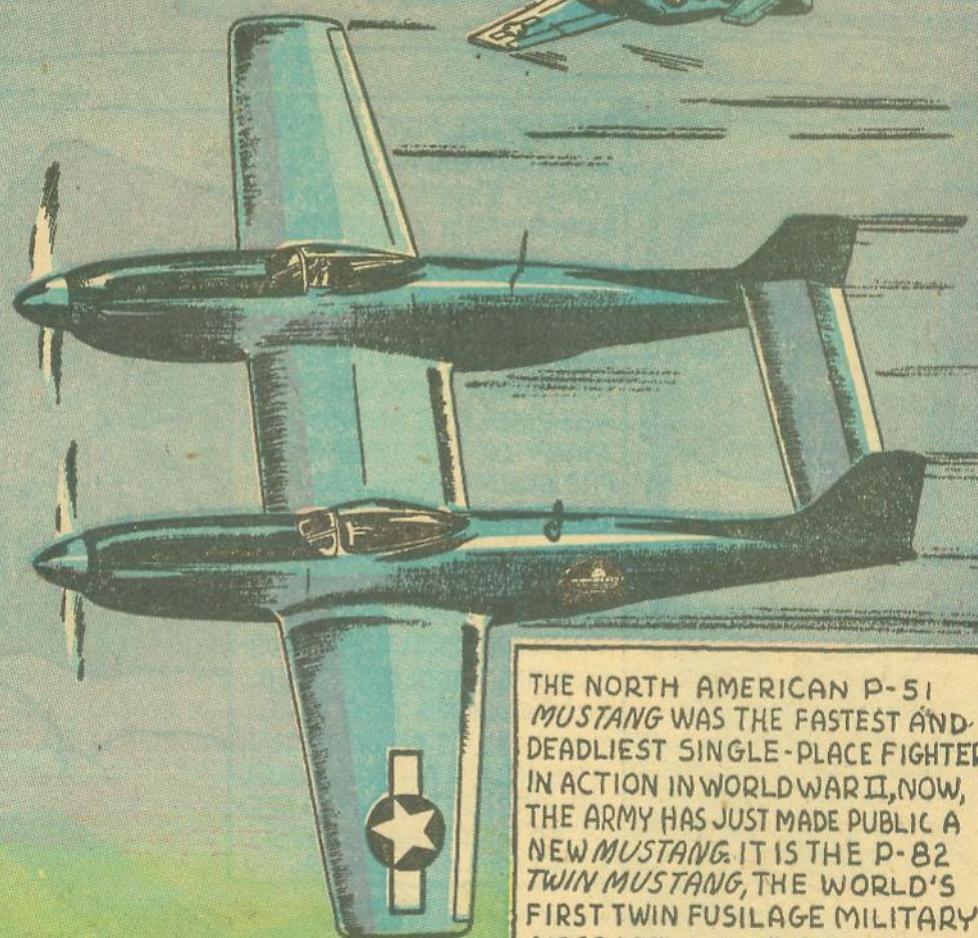


AT THE U.S. ARMY "AIR FORCES FAIR", AT WRIGHT FIELD, DAYTON, OHIO, IN OCTOBER, THE ARMY EXHIBITED THE FIRST "EDUCATED" BOMBS. THE NEW BOMBS CAN DO EVERYTHING BUT PILOT AN AIRPLANE. RADIO CAN EVEN DO THAT. ONE OF THESE "EDUCATED" BOMBS IS THE GB-4, A TELEVISION GLIDER BOMB. THIS IS A ONE-TON DEMOLITION BOMB WITH A TELEVISION CAMERA IN ITS FRONT HALF, IT LOOKS LIKE AN ORDINARY BOMB WITH A DOUBLE RUDDER AND TAIL. WHEN A PLANE RELEASES ONE OF THESE BOMBS, THE BOMBARDIER CAN LOOK ON THE SCREEN OF HIS TELEVISION SET, AND SEE JUST WHERE IT IS GOING, EVEN THOUGH HIS PLANE IS MILES AWAY TRAVELING IN THE OPPOSITE DIRECTION. OTHER BOMBS, EQUIPPED WITH TELEVISION CAMERAS, ARE RADIO-CONTROLLED. THE BOMB'S TELEVISION CAMERA TRANSMITS WHAT IT SEES TO THE BOMBARDIER'S SCREEN IN HIS PLANE AND HE DIRECTS THE MOUVEMENTS OF THE BOMB BY REMOTE CONTROL.



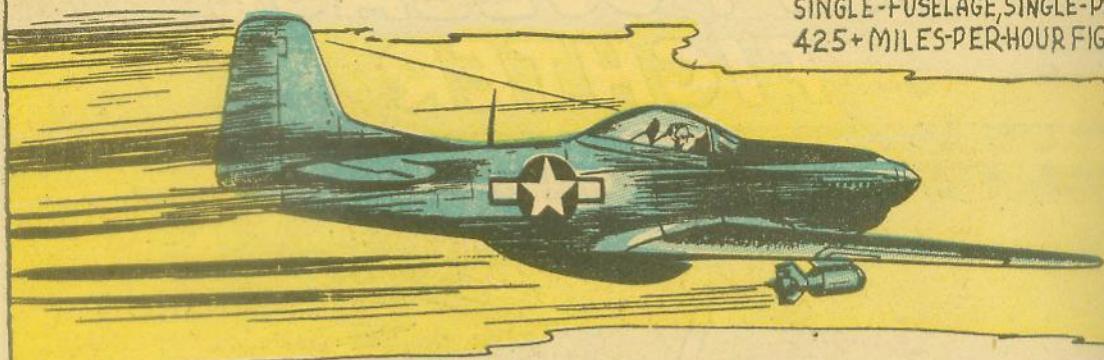
"GHOST" FIGHTER PLANE TAKES OFF FROM CARRIER BY REMOTE CONTROL.

TWIN FUSELAGE FIGHTER

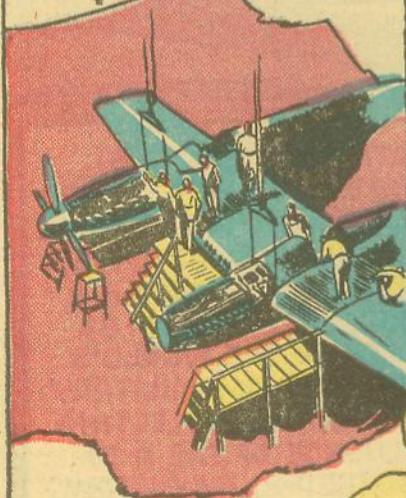


THE NORTH AMERICAN P-51 MUSTANG WAS THE FASTEST AND DEADLIEST SINGLE-PLACE FIGHTER IN ACTION IN WORLD WAR II. NOW, THE ARMY HAS JUST MADE PUBLIC A NEW MUSTANG. IT IS THE P-82 TWIN MUSTANG, THE WORLD'S FIRST TWIN FUSELAGE MILITARY AIRCRAFT. WHILE REFLECTING THE INFLUENCE OF THE P-51 MUSTANG, THE P-82 TWIN MUSTANG IS A COMPLETELY DIFFERENT AIRPLANE. IT IS THE FIRST FIGHTER DESIGNED ON THE BASIS OF AMERICA'S WORLD WAR II COMBAT EXPERIENCE, AND REPRESENTS A GREAT ADVANCE IN AIRCRAFT DESIGN.

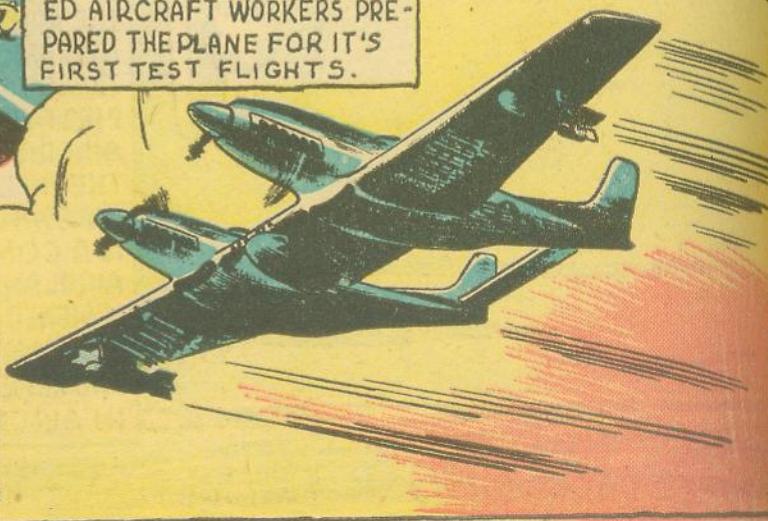
WORLD WAR II P-51 MUSTANG,
SINGLE-FUSELAGE, SINGLE-PLACE
425+ MILES-PER-HOUR FIGHTER

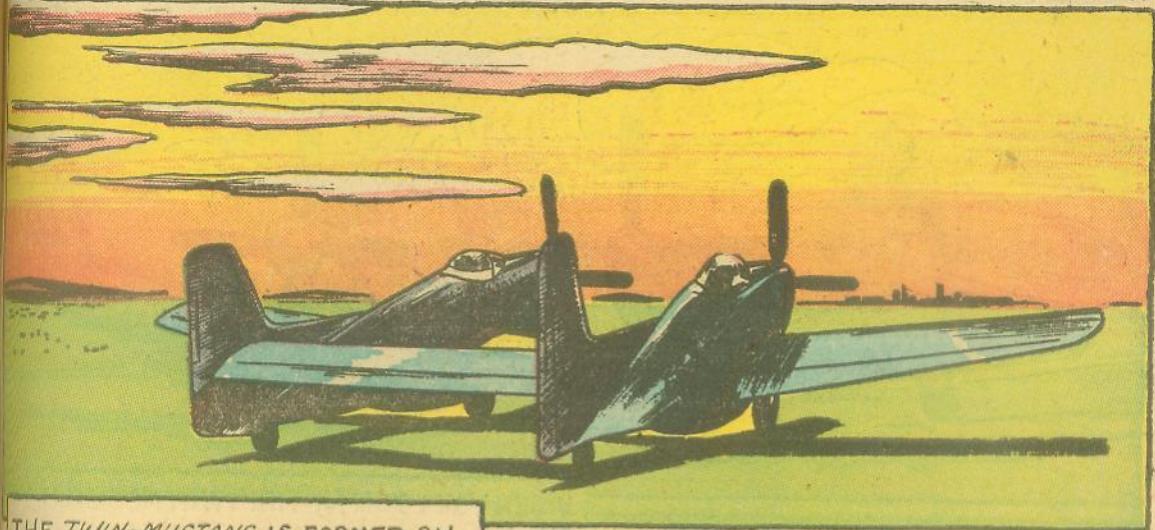


BACK OF THE FIRST FLIGHT OF THE P-82 WAS THE COMBAT EXPERIENCES OF WORLD WAR II "ACES" AND AIR TACTICIANS, AND THE WORK OF HUNDREDS OF ENGINEERS, TOOL MAKERS, DRAFTSMEN, DESIGNERS, PATTERN MAKERS, ASSEMBLERS AND OTHERS. MANY OF THE AERODYNAMIC PROBLEMS INVOLVED IN BUILDING THE WORLD'S FIRST TWIN-FUSELAGE FIGHTER WERE SOLVED IN WIND TUNNEL TESTS. EXPERTS DEVELOPED AND BUILT THE FOUR-BLADED, PADDLE-SHAPED PROPELLERS THAT PULL THE P-82 AT BETTER THAN 475 MILES AN HOUR. SKILLED AIRCRAFT WORKERS PREPARED THE PLANE FOR IT'S FIRST TEST FLIGHTS.



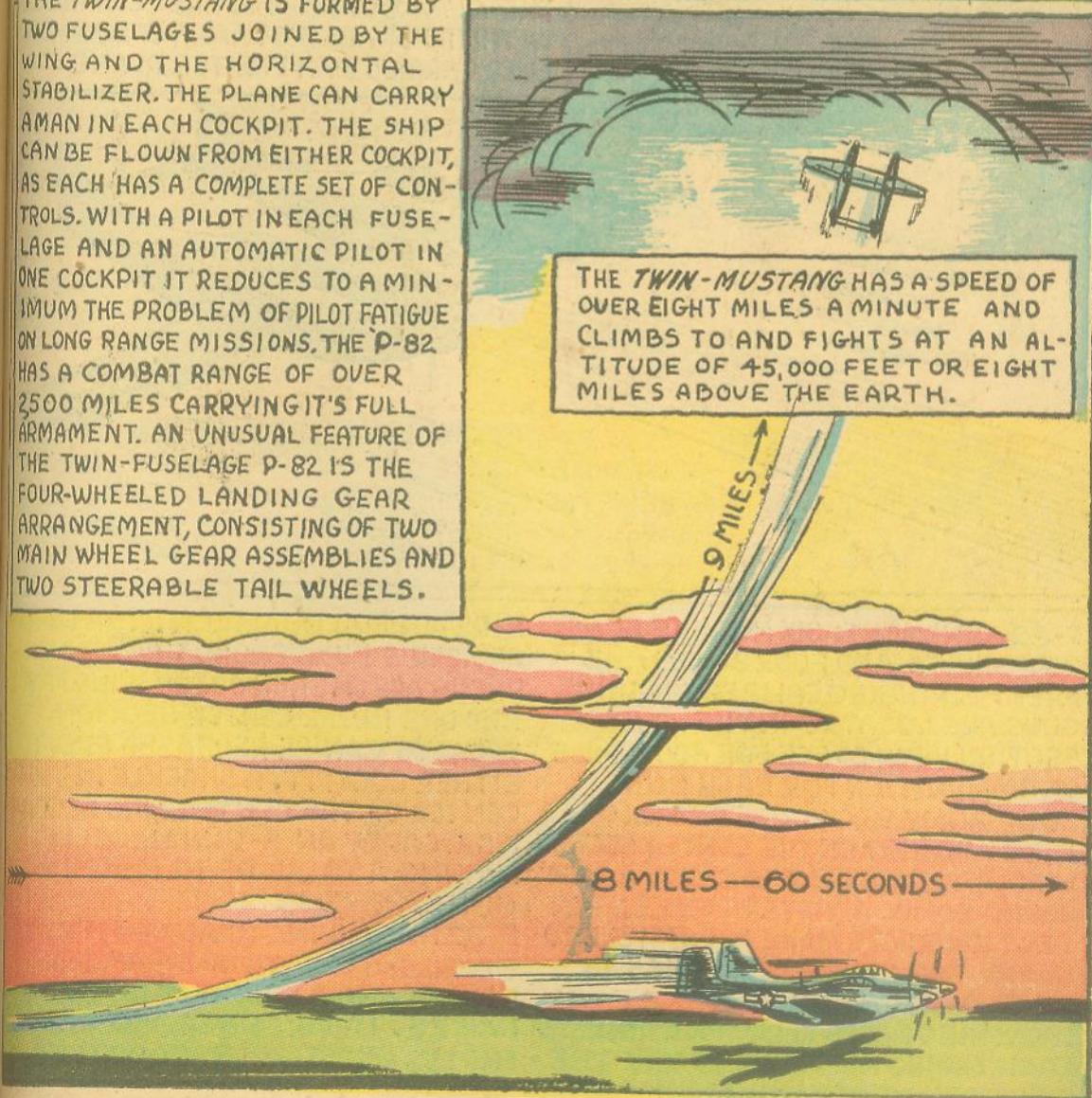
THE UNDERSIDE OF THE TWIN-MUSTANG MOUNTS A VERITABLE ARSENAL OF DEADLY ARMAMENT; MACHINE GUNS, ROCKETS AND BOMBS.

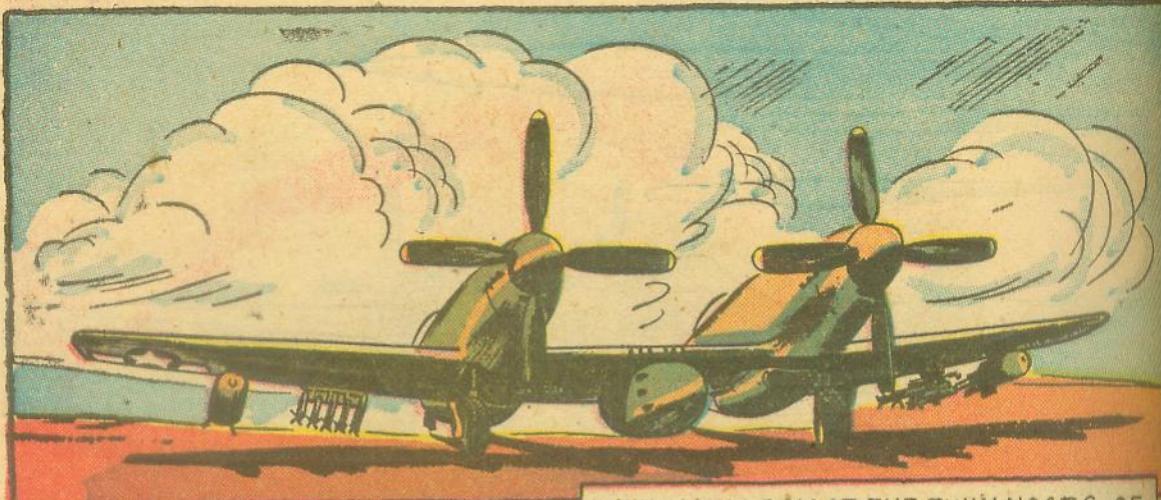




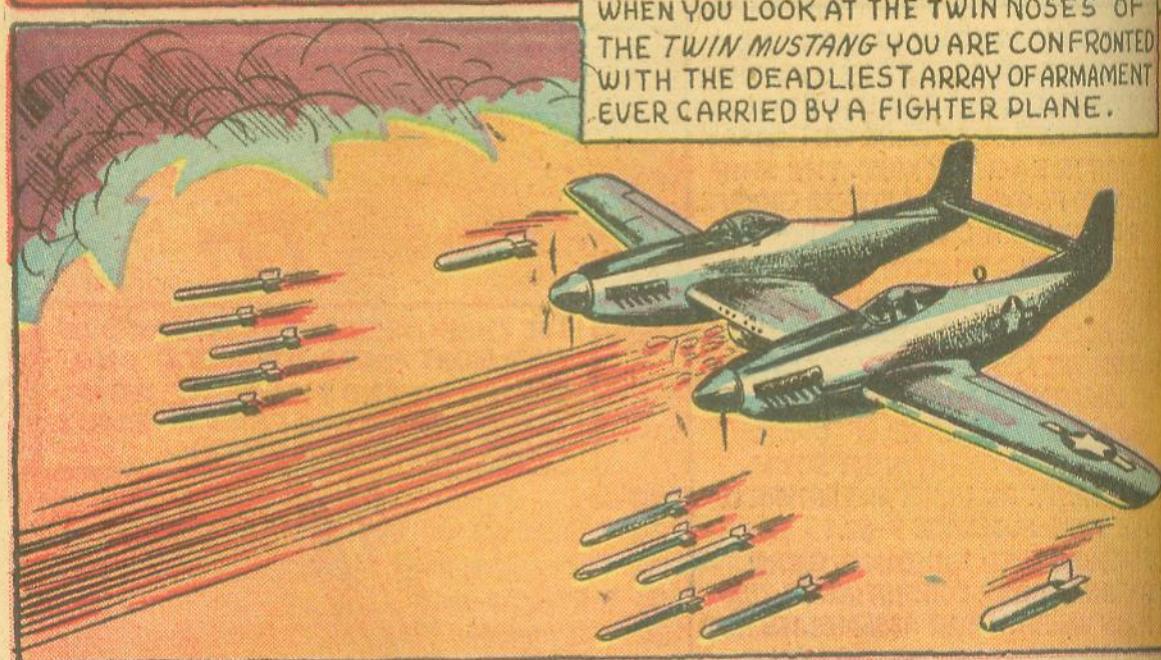
THE TWIN-MUSTANG IS FORMED BY TWO FUSELAGES JOINED BY THE WING AND THE HORIZONTAL STABILIZER. THE PLANE CAN CARRY A MAN IN EACH COCKPIT. THE SHIP CAN BE FLOWN FROM EITHER COCKPIT, AS EACH HAS A COMPLETE SET OF CONTROLS. WITH A PILOT IN EACH FUSELAGE AND AN AUTOMATIC PILOT IN ONE COCKPIT IT REDUCES TO A MINIMUM THE PROBLEM OF PILOT FATIGUE ON LONG RANGE MISSIONS. THE P-82 HAS A COMBAT RANGE OF OVER 2500 MILES CARRYING IT'S FULL ARMAMENT. AN UNUSUAL FEATURE OF THE TWIN-FUSELAGE P-82 IS THE FOUR-WHEELED LANDING GEAR ARRANGEMENT, CONSISTING OF TWO MAIN WHEEL GEAR ASSEMBLIES AND TWO STEERABLE TAIL WHEELS.

THE TWIN-MUSTANG HAS A SPEED OF OVER EIGHT MILES A MINUTE AND CLIMBS TO AND FIGHTS AT AN ALTITUDE OF 45,000 FEET OR EIGHT MILES ABOVE THE EARTH.





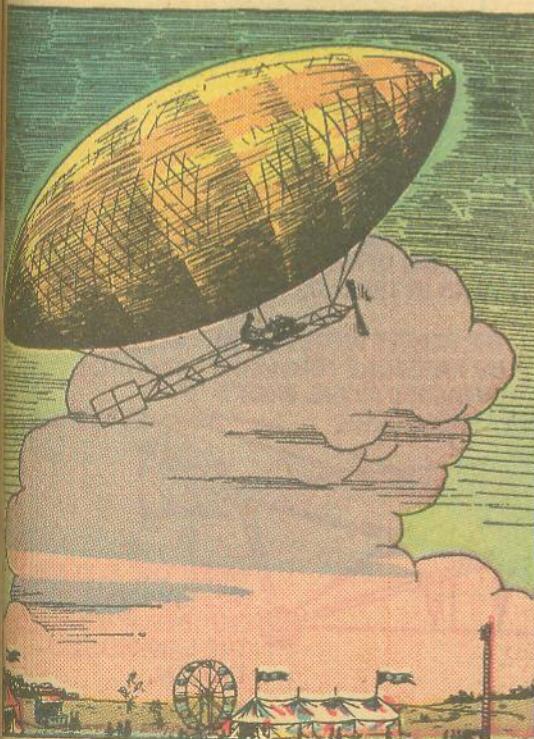
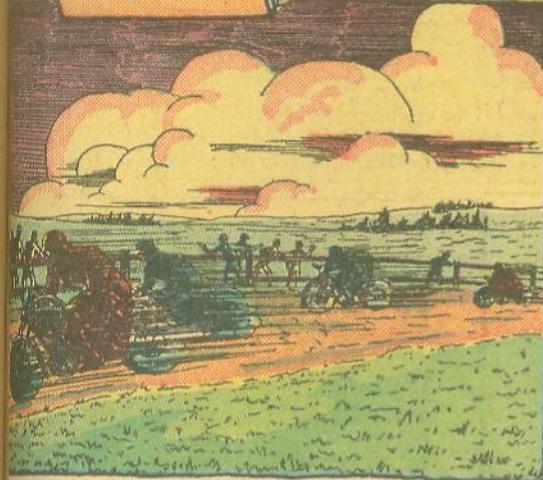
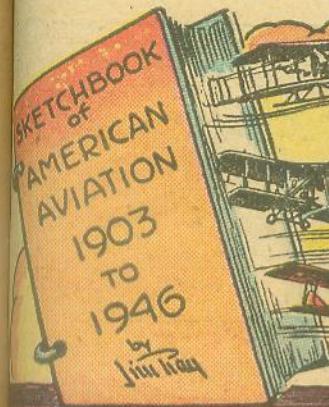
WHEN YOU LOOK AT THE TWIN NOSES OF THE TWIN MUSTANG YOU ARE CONFRONTED WITH THE DEADLIEST ARRAY OF ARMAMENT EVER CARRIED BY A FIGHTER PLANE.



P-82 ARMAMENT: SIX MACHINE GUNS, 25 ROCKETS AND FOUR BOMBS. SIX FREE-FIRING .50 CALIBER MACHINE GUNS ARE LOCATED IN THE CENTER SECTION WITH SPACE FOR 400 ROUNDS OF AMMUNITION FOR EACH GUN. FOUR BOMB RACKS, ONE ON EACH OUTER WING AND TWO ON THE CENTER SECTION WING, ARE EACH ABLE TO CARRY A 1,000 POUND BOMB. ADAPTERS ON CENTER SECTION RACKS MAKE IT POSSIBLE TO CARRY TWO 2,000 POUND BOMBS IN THAT POSITION. FIVE ROCKET-LAUNCHING RACKS CARRY FIVE ROCKETS EACH, GIVING THE TWIN MUSTANG THE

FIRE POWER EQUIVALENT TO A LIGHT CRUISER'S FULL BROADSIDE. TWO RACKS ARE ON EACH OUTER WING PANEL AND ONE IN THE CENTER SECTION. ROCKETS CAN BE RELEASED FROM EITHER COCKPIT. A SHACKLE IN THE CENTER OF THE CENTER WING SECTION WILL CARRY AN 8-GUN NACELLE, MAKING A TOTAL OF 14 MACHINE GUNS.

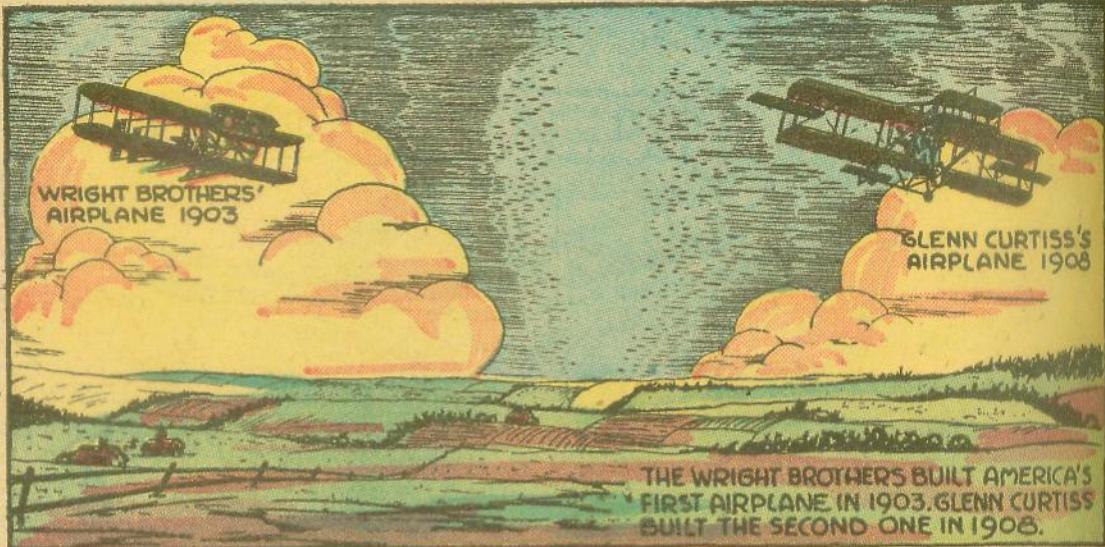
P-82 HAS A WING SPAN OF 51 FEET, 3 INCHES; A LENGTH OF 38 FEET 3 INCHES AND A HEIGHT OF 13 FEET 8 INCHES. IT WEIGHS 14,350 LBS. EMPTY, GROSS WEIGHT 20,000 LBS.



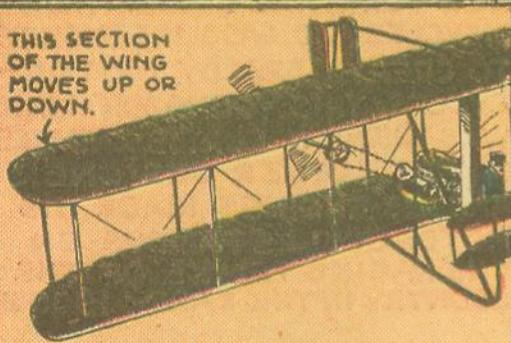
Jim Ray's SKETCHBOOK

WHILE THE WRIGHT BROTHERS WERE PERFECTING THEIR FIRST AIRPLANE OUT IN DAYTON OHIO, A SELF-TAUGHT YOUNG YANKEE IN HAMMONDSPORT, NEW YORK, WAS COMBINING BICYCLES AND GASOLINE ENGINES TO CREATE SPEEDY MOTORCYCLES. THIS YOUNG MECHANIC WAS GLENN H. CURTISS. HE WAS A VERY CLEVER DESIGNER AND HIS ENGINES MADE HIS MOTORCYCLES FAMOUS ON THE RACING TRACKS OF THE COUNTRY IN THE EARLY 1900'S.

IN 1904, THE PIONEER AMERICAN DIRIGIBLE BUILDER, CAPTAIN TOM BALDWIN, SAW A CURTISS MOTORCYCLE IN CALIFORNIA. HE HURRIED TO HAMMONDSPORT, AND BEGGED GLENN CURTISS TO BUILD HIM AN ENGINE FOR HIS NEW DIRIGIBLE. CURTISS BUILT THE ENGINE, THE FIRST CURTISS ENGINE TO FUNCTION IN THE SKIES. CURTISS FLEW BALDWIN'S DIRIGIBLE, BUT HE WAS NOT VERY ENTHUSIASTIC ABOUT FLYING. HOWEVER, IT WAS NOT LONG BEFORE DR. ALEXANDER GRAHAM BELL, THE INVENTOR OF THE TELEPHONE, CONVERTED GLENN CURTISS TO A BELIEF IN THE FUTURE OF FLYING.



THIS SECTION OF THE WING MOVES UP OR DOWN.



THE WRIGHT PLANE WAS BANKED BY WARPING THE WINGS. WHEN THE WING WAS WARPED DOWN, AIR PRESSURE LIFTED THAT WING TIP CAUSING THE PLANE TO BANK TOWARDS THE OPPOSITE SIDE.

THE WRIGHT BROTHERS' PATENTS COVERED THE WING WARPING SYSTEM FOR LATERAL CONTROL. WHEN GLENN CURTISS BUILT HIS FIRST PLANE HE DEVISED THE INTER-WING PANELS TO CONTROL THE BANKING OF THE

THE RUDDER WAS USED TO STEER THE PLANE IN LEVEL FLIGHT, AND TO MAINTAIN A TURN IN BANKING THE PLANE.



THE RUDDER COULD BE SWUNG TO RIGHT OR LEFT. AIR PRESSURE ON ITS SURFACE TURNED THE SHIP TO RIGHT OR LEFT.

THE PANELS WERE HINGED TO SWING UP OR DOWN.



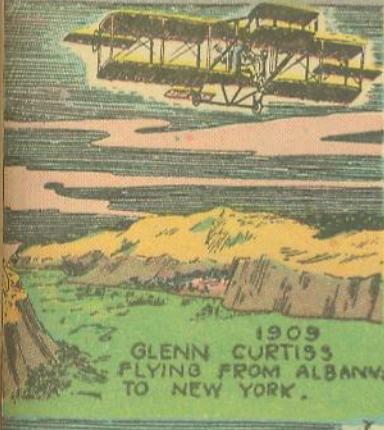
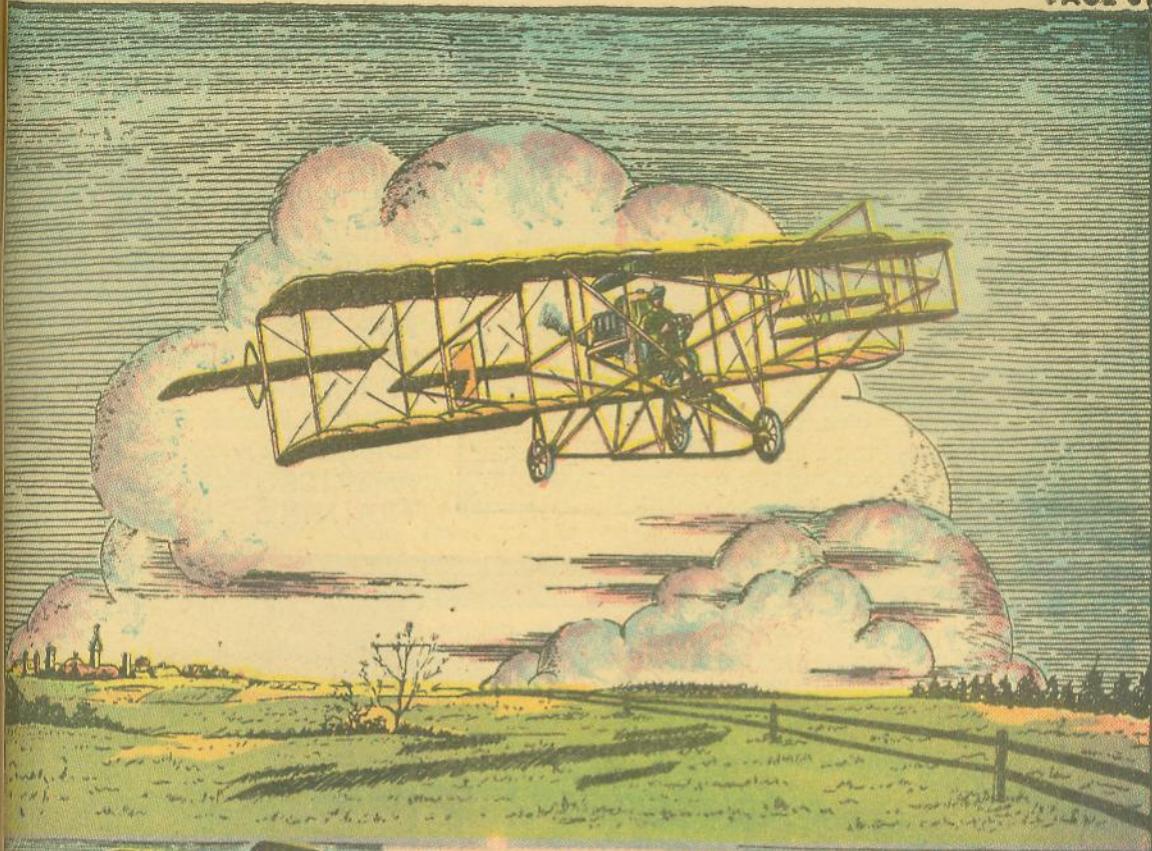
THE PANELS WERE MOVED BY PRESSURE ON A YOKE ATTACHED TO THE PILOT'S SHOULDERS.

ELEVATOR CONTROL



ELEVATOR
WHEN THE ELEVATOR WAS RAISED THE SHIP CLIMBED, IF LOWERED THE SHIP NOSED DOWN.

AIRPLANE. IT WAS NECESSARY TO BANK A PLANE TO TURN IT TO RIGHT OR LEFT. THE LOSS OF LIFT OF ONE WING AND THE ADDITION OF LIFT TO THE OPPOSITE WING CAUSED THE SHIP TO BANK IN THE DIRECTION OF THE LOSS OF LIFT.



1909
GLENN CURTISS
FLYING FROM ALBANY
TO NEW YORK.

GLEN CURTISS BEGAN TO MAKE AVIATION RECORDS ALMOST AS SOON AS HE HAD BUILT HIS FIRST PLANE. THIS WAS IN MARCH 1908. SOON AFTER THIS CURTISS BUILT A NEW AND IMPROVED PLANE, AND CALLED IT THE "JUNE BUG." HE WON THE SCIENTIFIC AMERICAN CONTEST FOR FLYING OVER A MEASURED KILOMETER COURSE ON JULY 4, 1908. IN 1909, CURTISS AGAIN WON THE SCIENTIFIC AMERICAN AWARD, BY FLYING 24.7 MILES OVER A CLOSED COURSE. IN 1910 HE WON A \$10,000. PRIZE FOR THE FIRST FLIGHT FROM ALBANY TO NEW YORK CITY. HE FLEW 137 MILES AT A SPEED OF 54.8 MILES PER HOUR.



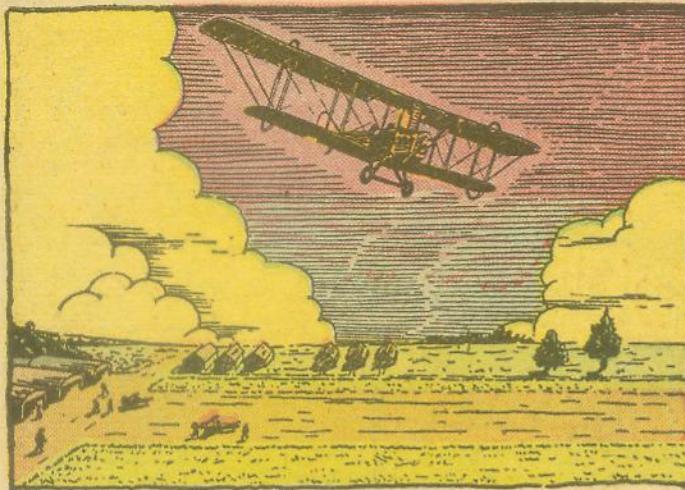
GLENN CURTISS WINS THE
WORLD'S FIRST BIG AIR RACE AT
RHEIMS, FRANCE, 1909.



GLENN CURTISS BUILDS
AMERICA'S FIRST SUCCESSFUL
SEAPLANE, 1911.

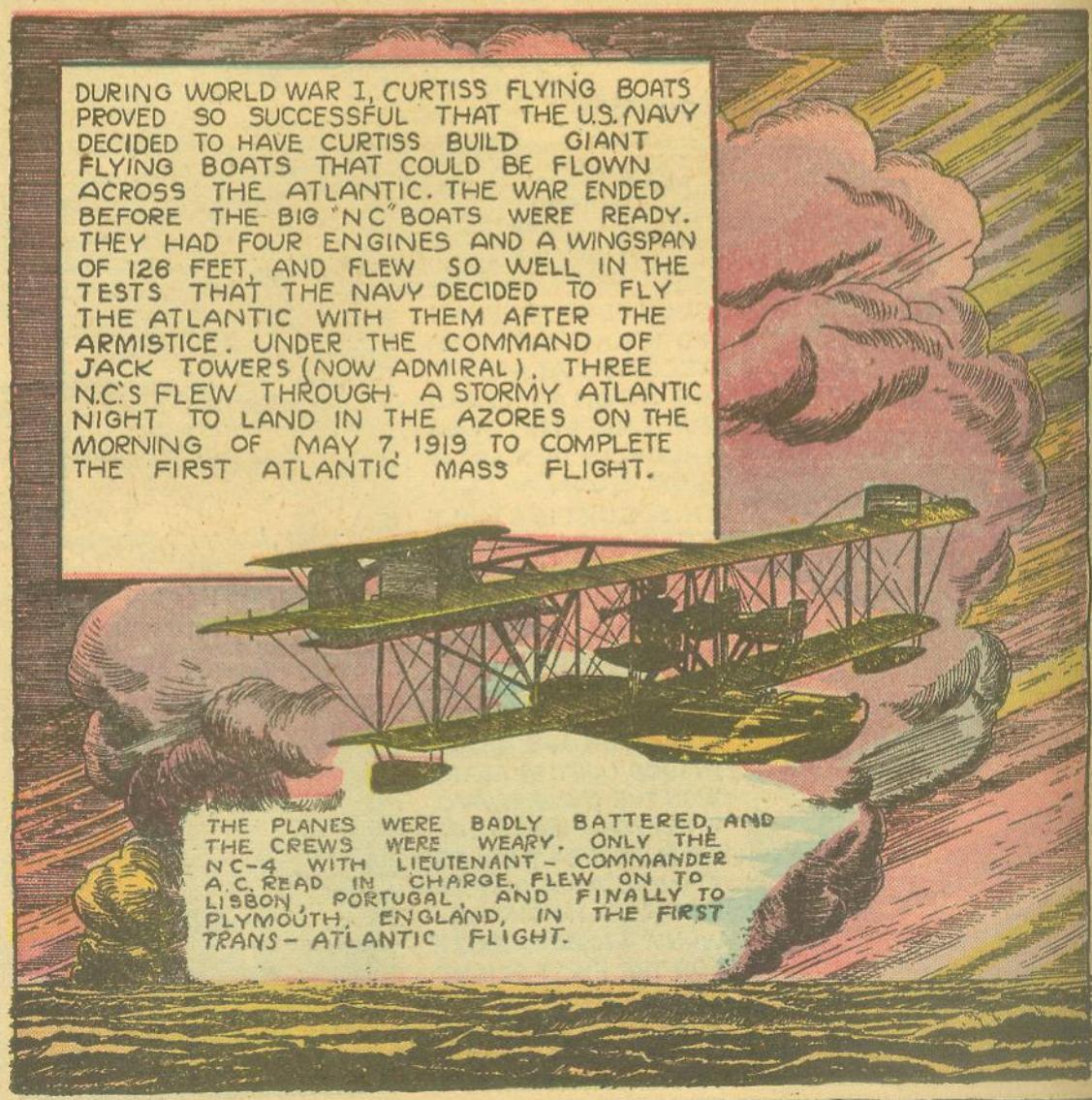


CURTISS PLANE TAKES OFF
FROM AND LANDS ON THE
DECK OF A SHIP, 1911.



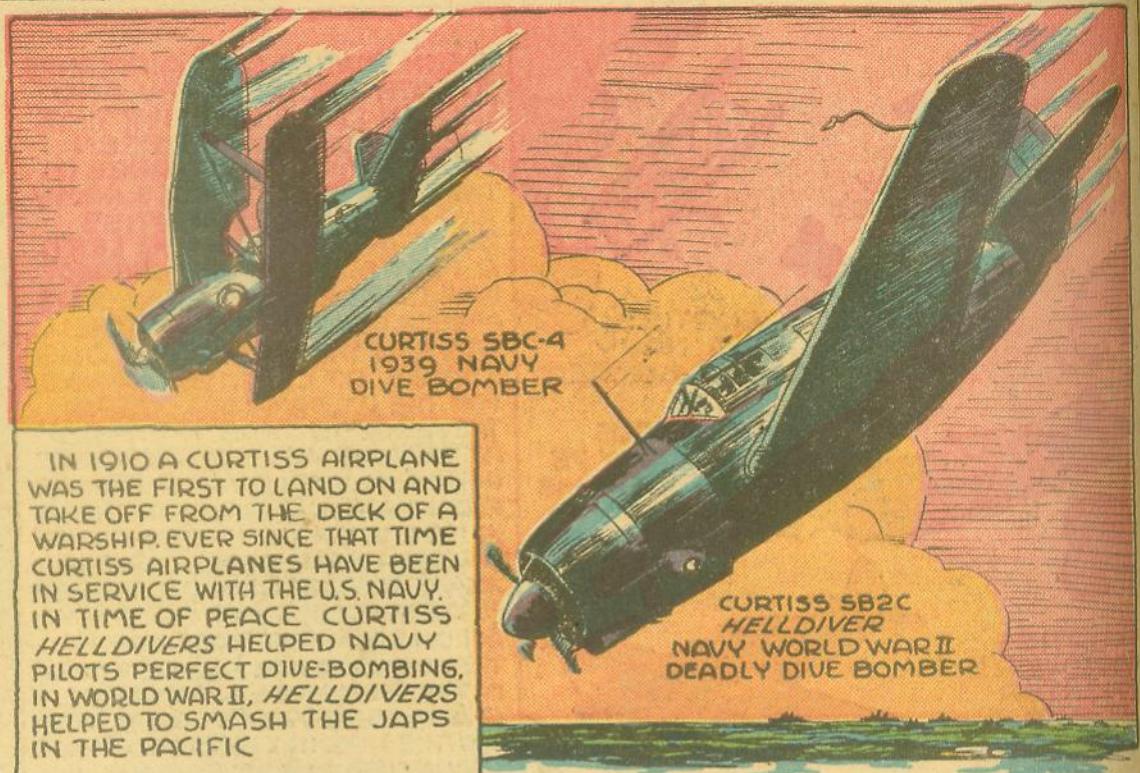
FROM THE TIME HE FIRST BEGAN TO MAKE AIR RECORDS IN 1908, GLENN CURTISS TOOK HIS PLACE ALONGSIDE OF THE WRIGHT BROTHERS AS ONE OF THE FAMOUS PIONEERS OF AMERICAN AVIATION. CURTISS BUILT PLANES FOR THE STRUGGLING YOUNG AVIATION BRANCHES OF THE ARMY AND NAVY. IN WORLD WAR I, THE FAMOUS CURTISS "JENNY" BECAME AMERICA'S MOST USED TRAINING PLANE.

DURING WORLD WAR I, CURTISS FLYING BOATS PROVED SO SUCCESSFUL THAT THE U.S. NAVY DECIDED TO HAVE CURTISS BUILD GIANT FLYING BOATS THAT COULD BE FLOWN ACROSS THE ATLANTIC. THE WAR ENDED BEFORE THE BIG "NC" BOATS WERE READY. THEY HAD FOUR ENGINES AND A WINGSPAN OF 126 FEET, AND FLEW SO WELL IN THE TESTS THAT THE NAVY DECIDED TO FLY THE ATLANTIC WITH THEM AFTER THE ARMISTICE. UNDER THE COMMAND OF JACK TOWERS (NOW ADMIRAL), THREE N.C.'S FLEW THROUGH A STORMY ATLANTIC NIGHT TO LAND IN THE AZORES ON THE MORNING OF MAY 7, 1919 TO COMPLETE THE FIRST ATLANTIC MASS FLIGHT.





GLENN CURTISS SOLD AIRPLANES TO BOTH THE U. S. ARMY AND NAVY IN 1911. SINCE THAT TIME THERE HAVE ALWAYS BEEN CURTISS MILITARY PLANES IN THE SERVICE OF THE U. S. ARMY AND NAVY. IN 1923 CURTISS BUILT THE PW-8, UPPER LEFT, A FAST SINGLE-SEAT PLANE THAT WAS INSPIRED BY THE FAMOUS AIRMEN, GENERAL "BILLY" MITCHELL. THIS WAS THE FIRST OF A LONG SERIES OF CURTISS HAWKS FOR THE U. S. ARMY AIR CORPS. THE HAWK 75 WAS THE FIRST AMERICAN-BUILT FIGHTER TO SEE ACTION IN WORLD WAR II. FRENCH PILOTS USED IT AGAINST THE NAZIS IN 1939. WHEN THE UNITED STATES ENTERED WORLD WAR II, THE P-40 HAWK WAS THE ONLY U. S. FIGHTER PLANE IN PRODUCTION. P-40'S SAW ACTION FROM THE FIRST DAY OF THE WAR AT PEARL HARBOR AND IN THE PHILIPPINES. GENERAL CHENNAULT'S "FLYING TIGERS" STOPPED THE JAPS IN CHINA WITH P-40'S. THEY HELPED TO ROUT ROMMEL IN AFRICA AND CHASE THE NAZIS BACK THROUGH ITALY. MORE THAN 10,000 P-40'S WENT INTO SERVICE IN WORLD WAR II. P-40'S RAN UP A SCORE OF 13½ ENEMY PLANES DESTROYED FOR EVERY P-40 LOST.



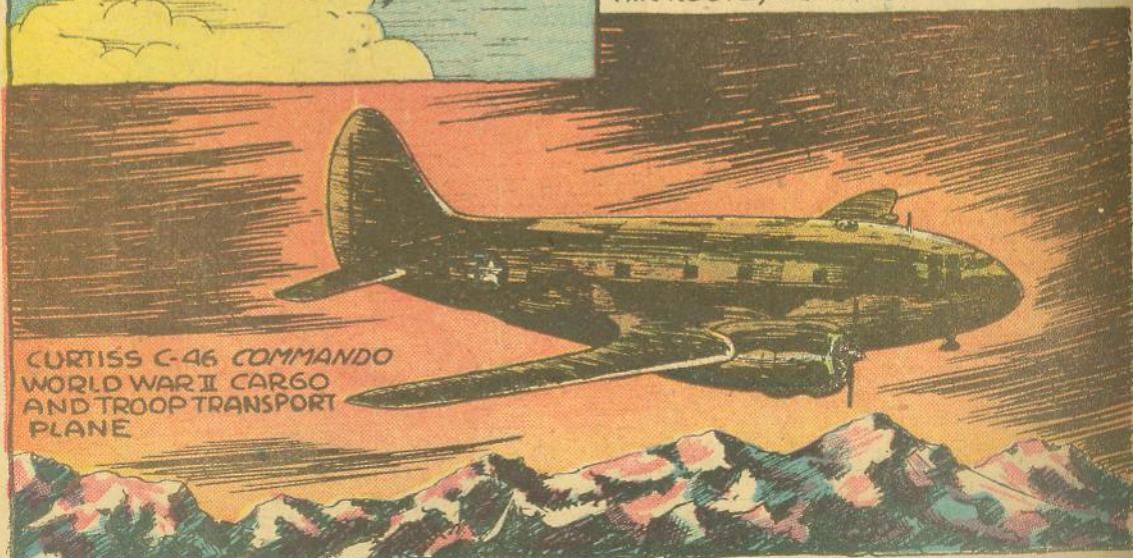
IN 1910 A CURTISS AIRPLANE WAS THE FIRST TO LAND ON AND TAKE OFF FROM THE DECK OF A WARSHIP. EVER SINCE THAT TIME CURTISS AIRPLANES HAVE BEEN IN SERVICE WITH THE U.S. NAVY. IN TIME OF PEACE CURTISS HELLDIVERS HELPED NAVY PILOTS PERFECT DIVE-BOMBING. IN WORLD WAR II, HELLDIVERS HELPED TO SMASH THE JAPS IN THE PACIFIC

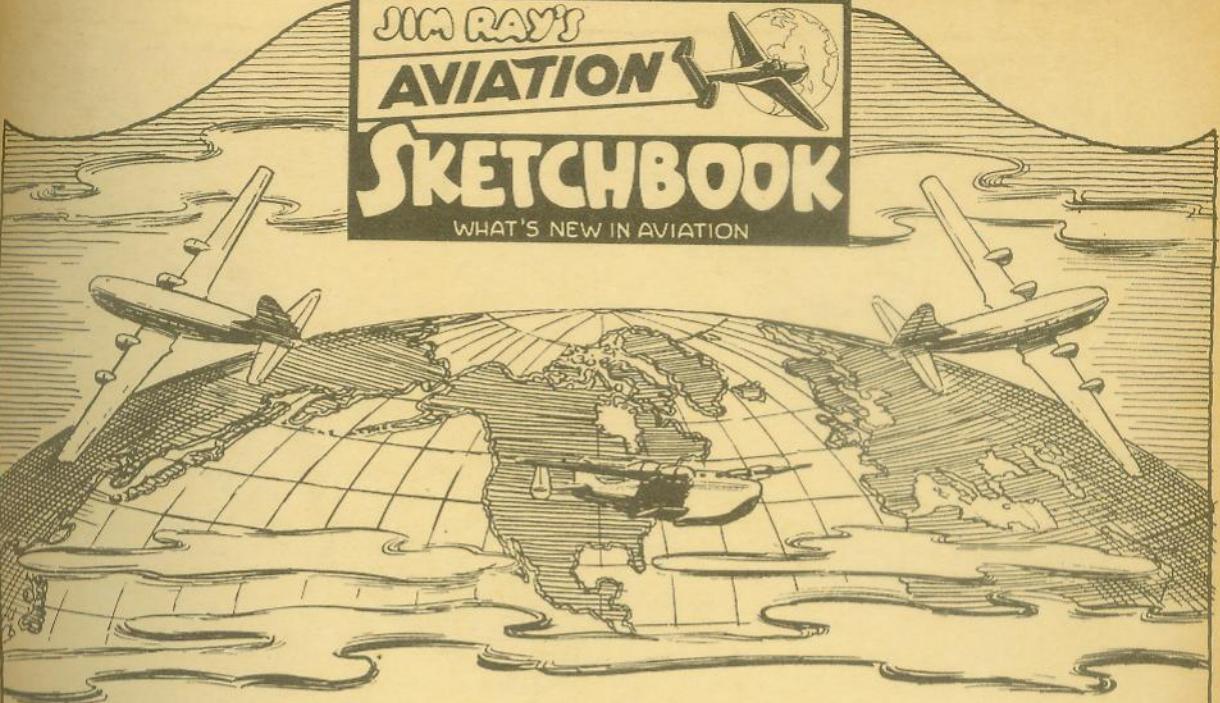
CURTISS SB2C
HELLDIVER
NAVY WORLD WAR II
DEADLY DIVE BOMBER



THE CURTISS CONDOR, BUILT IN 1934, WAS THE WORLD'S FIRST SLEEPER PLANE. THE GIANT TWO-ENGINED CURTISS C-46 COMMANDO WENT INTO SERVICE DURING WORLD WAR II. THE COMMANDO, WITH ITS CAPACITY FOR THE SWIFT MOVEMENT OF MEN, ARMS, AND SUPPLIES TO THE GLOBAL WARFRONTS, HELPED GREATLY TO SPEED VICTORY. COMMANDOS FLEW THE WORLD'S WORST AIR ROUTE, FROM INDIA TO CHINA.

CURTISS C-46 COMMANDO
WORLD WAR II CARGO
AND TROOP TRANSPORT
PLANE





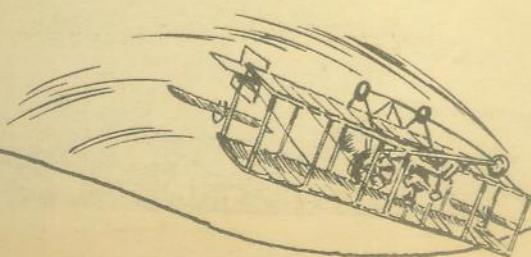
JIM RAY'S
AVIATION 
SKETCHBOOK
WHAT'S NEW IN AVIATION

COMING

In the next issue of the Sketchbook Jim Ray is going to bring you another 64 pages of interesting and thrilling picture stories of the men and planes that have made aviation history.

There will be an exciting story of a young man who made the globe a map for his airline—The Story of Juan Trippe, President of Pan American World Airways, who planned and built a 90,000-mile airway that circles the world. There will be a message from Juan Trippe to the boys and girls of America. There will be a story of another famous airman who made aviation history years ago, the story of the greatest "barn-stormer" of all the daring young men who flew in the early days of American aviation.

Also there will be stories and pictures of AIRCRAFT ENGINES—FLYING FREIGHTER—THE SKYCYCLE—INSIDE DOPE ON FAMOUS NAZI JET FIGHTERS—LIGHT PLANES—ANOTHER STORY ABOUT WEATHER—AND OTHER STORIES OF AIRPLANES BOTH OLD AND NEW.



LINCOLN BEACHEY
THE FIRST AMERICAN
TO LOOP THE LOOP

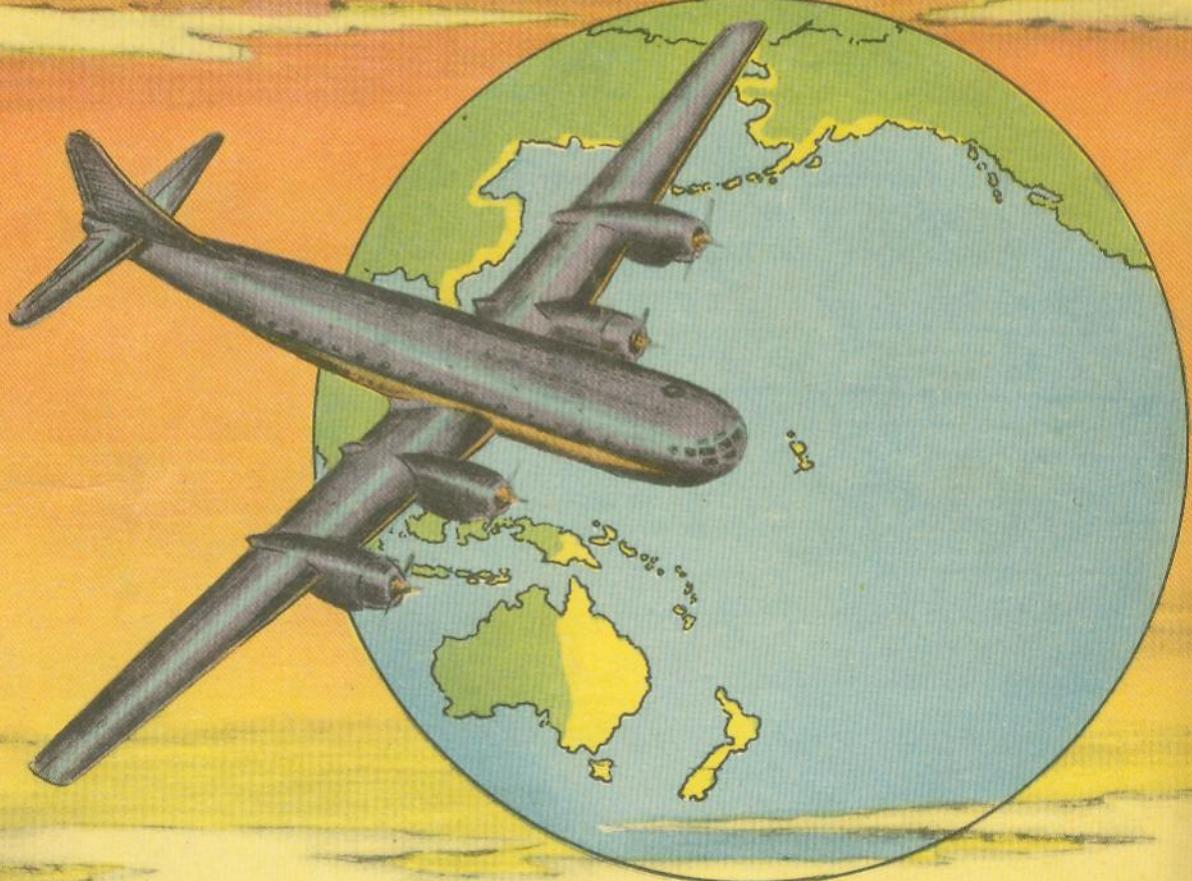
JIM RAY'S

AVIATION

SKETCHBOOK

WHAT'S NEW IN AVIATION

15¢



WHAT'S NEW IN AVIATION — STRATOCRUISER — TWIN FUSELAGE
FIGHTER — STRATOVISION — FLYING TRAPEZE FOR AIRPLANES —
FLYING FARMERS — GHOST PLANES